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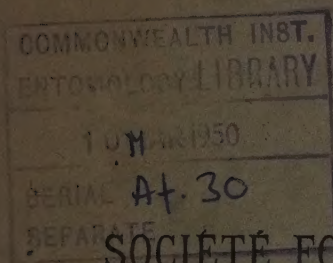






42° Année

33° Volume



# BULLETIN

DE LA

SOCIÉTÉ FOUAD I<sup>er</sup> D'ENTOMOLOGIE

anciennement :

*Société Entomologique d'Egypte (1907-1921)*  
et *Société Royale Entomologique d'Egypte (1922-1937)*



FONDÉE LE 1<sup>er</sup> AOUT 1907

PLACÉE SOUS LE HAUT PATRONAGE DU GOUVERNEMENT EGYPTIEN  
PAR DÉCRET ROYAL EN DATE DU 15 MAI 1923

LE CAIRE  
IMPRIMERIE PAUL BARBEY

1949

## SOCIÉTÉ FOUAD I<sup>er</sup> D'ENTOMOLOGIE

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BULLETIN  
DE LA  
SOCIÉTÉ FOUAD I<sup>er</sup> D'ENTOMOLOGIE



QUARANTE-DEUXIÈME ANNÉE  
TRENTE-TROISIÈME VOLUME

1949







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Date de parution et de distribution du présent Volume :

31 Décembre 1949

Le Rédacteur en Chef :

A. ALFIERI

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DE LA SOCIÉTÉ FOUAD I<sup>er</sup> D'ENTOMOLOGIE**

**Le Très Regretté Roi FOUAD I<sup>er</sup>**

**et**

**Sa Majesté le Roi FAROUK I<sup>er</sup>**

**BIENFAITEURS**

1924

M. MOUSTAPHA MOURAD EL-SALANEKLI Bey, de Damanhour (Béhéra).

1925

S.E. EL-SAYED FATHALLAH MAHMOUD Pacha, de Rahmania (Béhéra);  
M. RIAD ABDEL-KAWI EL-GEBALI Bey, de Chebin-El-Kom (Menoufia); S.E.  
GEORGES WISSA Pacha, d'Assiout (Haute-Egypte); M. YEHIA KAWALLI Bey,  
de Minieh (Haute-Egypte); M. YACOB BIBAWI ATTIA Bey, de Minieh  
(Haute-Egypte); S.E. HASSAN CHARAWI Pacha, de Minieh (Haute-Egypte);  
S.E. HABIB CHENOUDA Pacha, d'Assiout (Haute-Egypte); M. MOHAMED  
TEWFIK MOHANNA Bey, de Tewfikieh (Béhéra); M. HASSAN AHMED MOUSSA  
Bey, de Minieh (Haute-Egypte); M. LABIB BARSOUM HANNA Bey, de Minieh  
(Haute-Egypte); S.E. HASSAN MOHAMED EL-TAHTAWI Pacha, de Ghirghieh  
(Haute-Egypte); M. KASSEM OSMAN EL-LABBAN Bey, de Ghirghieh (Haute-  
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(Haute-Egypte); M. BARSOUM SAID ABDEL-MESSIH Bey, de Minieh (Haute-  
Egypte); M. DORDEIR TAHA ABOU-GOUNEMA Bey, de Minieh (Haute-Egypte).

1926

M. MOHAMED RIFAAT EL-ROZNAMGY Bey.

1927

M. le Dr. WALTER INNES Bey (décédé en 1937); M. le Dr. Avocat  
GIOVANNI FERRANTE (décédé en 1946).

1928

M. le Professeur HASSAN C. EFFLATOUN Bey, du Caire; M. HUGO  
LINDEMAN (décédé en 1937).

1932

M. ALFRED REINHART (décédé en 1935).

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### Membres du Conseil

S.E. le Prof. MAHMOUD TEWFIK HIFNAOUI Pacha, *Président*.

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M. MOHAMED SOLIMAN EL-ZOHEIRY Bey, *Vice-Président*.

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M. le Prof. HASSAN C. EFFLATOUN Bey, M. le Prof. Dr. HAMED SELEEM SOLIMAN Bey, M. MOHAMED SOLIMAN EL-ZOHEIRY Bey, M. le Prof. Dr. H. PRIESNER, M. le Prof. Dr. KAMEL MANSOUR, M. le Dr. SAADALLAH MOHAMED MADWAR Bey, M. le Dr. MAHMOUD HAFEZ, M. ANASTASE ALFIERI.

### Genseurs

M. E. KAOURK et M. ELHAMY GREISS.

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# LISTE DES MEMBRES

## DE LA

# SOCIÉTÉ FOUAD I<sup>er</sup> D'ENTOMOLOGIE

## EN 1949

(Les noms des Membres Fondateurs sont précédés de la lettre F)

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### Membres Honoraires

- |      |  |
|------|--|
| 1908 | ALLUAUD (Charles), Les Ouches à Crozant (Creuse), France.  |
| 1924 | EBNER (Prof. Richard), 3, Beethovengasse, Vienne (X), Autriche.  |
| 1929 | PEYERIMHOFF DE FONTENELLE (P. de), 87, Boulevard Saint-Saëns<br>Alger, Algérie.  |
| 1908 | PIC (Maurice), Les Guerreaux, par Saint-Agnan (Saône-et-Loire),<br>France.   |
| 1943 | UVAROV (Dr. B.P.), Director Anti-Locust Research Centre,<br>British Museum (Natural History), Cromwell Road, Londres,<br>S.W. 7, Angleterre. |
| F    | WILCOCKS (F.C.), « Brambles », Hurst Lane, Sadlescombe (near<br>Battle), Sussex, Angleterre.   |

### Membres Correspondants

- |      |  |
|------|--|
| 1932 | ALFKEN (J.D.), 18, Delmestrasse, Brême, Allemagne.   |
| 1926 | HALL (Dr. W.J.), c/o The Commonwealth Institute of Entomology,<br>41, Queen's Gate, London, S.W.7, Angleterre. |
| 1924 | HINDLE (Prof. Dr. Edouard), Zoological Society of London,<br>Regent's Park, London, N.W. 8, Angleterre.        |
| 1925 | KIRKPATRICK (Thomas Winfrid), The Imperial College of Tropical<br>Agriculture, Trinidad, British West Indies.  |
| 1934 | KOCH (C.), Eaton Hall, Visagie Street, Prétoria, Afrique du Sud.   |
| 1929 | MASI (L.), Museo Civico di Storia Naturale « Giacomo Doria »,<br>9, Via Brigata Liguria, Genova (102); Italie. |
| 1934 | SCHATZMAYR (A.), Museo Civico di Storia Naturale, 55, Corso<br>Venezia, Milano, Italie.                        |
| 1927 | WILLIAMS (C.B.), Rothamsted Experimental Station, Harpenden,<br>Herts, Angleterre.                             |

**Membres Titulaires**

- 1913 ABAZA Pacha (S.E. Fouad), Directeur Général de la Société Royale d'Agriculture, Boîte Postale N° 63, au Caire.
- 1944 ABDEL MALEK (Dr. Albert A.), Conférencier au Département d'Entomologie, Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.
- 1949 AFIFI (Mahmoud Afifi), Démonstrateur au Département d'Entomologie, Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.
- 1908 ALFIERI (Anastase), Secrétaire Général et Conservateur de la Société Fouad I<sup>er</sup> d'Entomologie, Boîte Postale N° 430, au Caire.
- 1941 AMIN EL-DIB (Abdel-Latif), Faculté d'Agriculture, Université Farouk I<sup>er</sup>, Camp de César, Alexandrie.
- 1949 AMIN (El-Sayed), Démonstrateur au Département de Chimie, Faculté des Sciences, Université Farouk I<sup>er</sup>, Moharrem Bey, Alexandrie.
- 1949 ANDERSEN (Vagn Steen), délégué en Egypte de la Farbenfabriken Bayer (Département de Protection des Plantes), Pension Mayfair, 9, Sharia Aziz Osman, Zamalek, au Caire.
- 1938 ATTIA (Rizk), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1945 AZAB (Dr. Ahmed Kamel), Département d'Entomologie, Faculté d'Agriculture, Université Fouad I<sup>er</sup>, Sharia El-Madares, Ghizeh, près le Caire.
- BADAWI (Aly Ibrahim), Démonstrateur au Département d'Entomologie, Institut Supérieur d'Agriculture, Chebin El-Kom (Menoufieh), Basse-Egypte.
- 1938 BAILEY BROS. AND SWINFEN LTD., 11, Ronalds Road, Highbury, London, N. 5, Angleterre.
- 1948 BARTOLOCCI (Dr. Mario), 30, Sharia Fouad I<sup>er</sup>, au Caire.
- 1929 BICHARA (Ibrahim), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1946 BIGIO (Henri), Embassy Court, 11, Sharia Gabalaya, Ghézireh, au Caire.
- 1923 BODENHEIMER (Prof. F.S.), Hebrew University, Jerusalem, Palestine:
- 1938 CARNERI (Alexandre), 9, Sharia Ebn El-Farred, Attarine, Alexandrie.
- 1929 CASSAB (Antoine), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.

- 1923 CENTRAL LIBRARY, Research Division, Agriculture and Forests, Wad Medani, Soudan.
- 1943 CHAARAWI (Ahmed Mounir), Assistant Technique, Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- F CHAKOUR (Edgard), Secrétaire Général de la Société Anonyme des Eaux du Caire, Boîte Postale N° 55, au Caire.
- 1931 COMPAGNIE UNIVERSELLE DU CANAL MARITIME DE SUEZ (Monsieur l'Agent Supérieur de la), 20, Sharia Dar El-Chefa, Kasr El-Doubara, Boîte Postale N° 2120, au Caire.
- 1944 COYNE (Dr. F.P.), c/o Imperial Chemical Industries Ltd. (General Chemistry Division), Pest Control Section, Randle, Astmoor, Runcom, Cheshire, Angleterre.
- 1934 CRÉDIT FONCIER EGYPTIEN (Monsieur l'Administrateur-Délégué), 35, Sharia Abdel Khalek Saroit Pacha, au Caire.
- 1944 DAIRA DRANEHT Pacha, Sarawella, par Kafr-Dawar (Béhéra), Basse-Egypte.
- 1948 DAOUD (Hanna), Section d'Entomologie, Ministère de l'Agriculture, Dokki, (Ghizeh), près le Caire.
- 1938 DIRECTORATE-GENERAL OF AGRICULTURE, Ministry of Economics, Baghdad, Irak.
- 1928 DÖLFLUS (Robert Ph.), Directeur de Laboratoire et de Recherches, Museum National d'Histoire Naturelle, 57, Rue Cuvier, Paris (V<sup>me</sup>), France.
- 1919 EFFLATOUN Bey (Prof. Hassan C.), Vice-Doyen et Professeur d'Entomologie, Faculté des Sciences, Université Fouad I<sup>er</sup>, 16, Sharia Hoda Chaarawi, au Caire.
- 1946 EL-KHISHEN (Dr. Shafik Aly), Faculté d'Agriculture, Université Farouk I<sup>er</sup>, Camp de César, Alexandrie.
- 1948 ELZIADY (Mademoiselle Samira), Département d'Entomologie, Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.
- 1947 EZZ (Ahmed Ibrahim), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1947 EZZAT (Yehia Mahmoud), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1944 FACULTÉ D'AGRICULTURE (Bibliothèque de la), Université Farouk I<sup>er</sup>, Camp de César, Alexandrie.
- 1931 FACULTÉ D'AGRICULTURE, Université Fouad I<sup>er</sup>, Sharia El-Madares, Ghizeh, près le Caire.

- 1946 FACULTÉ DE MÉDECINE (Bibliothèque de la), Université Farouk I<sup>er</sup>, Alexandrie.
- 1941 FAHMY (Aly), Section d'Entomologie, Ministère de l'Agriculture. Dokki (Ghizeh), près le Caire.
- 1949 FLASCHENTRAEGER (Dr. Bonifaz), Professeur de Chimie Biologique, Faculté des Sciences, Université Farouk I<sup>er</sup>, Moharrem Bey, Alexandrie.
- 1948 FRANGOPOULOS (Aristide Mikhali), Ingénieur Agronome, Borg Gianaclis, Abou Matamir (Béhéra), Basse-Egypte.
- 1914 GARBOUA (Maurice), 1, Midan Soliman Pacha, au Caire.
- 1938 GHABN (Dr. Abdel-Aziz), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1927 GHALI Pacha (S.E. Wacef Boutros), 35, Sharia El-Ghizeh, Ghizeh, près le Caire.
- 1938 GHESQUIÈRE (J.), 87, Avenue du Castel, Bruxelles (W. St L.), Belgique.
- 1947 GHIBRIAL (Mounir), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1945 GREEN (J.) & Co., Département Agriculture, 147, Sharia Mohamed Farid Bey (ex Emad El-Dine), Boîte Postale N° 600, au Caire.
- 1921 GREISS (Elhamy), 215, Sharia El-Malika Nazli, au Caire.
- 1942 HABIB (Abdallah), Conférencier en Entomologie à l'Institut Supérieur d'Agriculture, Chebin El-Kom (Menoufieh), Basse-Egypte.
- 1936 HAFEZ (Dr. Mahmoud), Professeur-Adjoint d'Entomologie, Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.
- 1944 HAFEZ (Moustafa), Laboratoire des Insectes Parasites, Cotton Research Board, Ghizeh (Orman), près le Caire.
- 1948 HAINES (Prof. R. Wheeler), Hôpital Demerdache, Sharia El-Malika Nazli (Abbassieh), au Caire.
- 1938 HAMZA (Soliman), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1938 HANNA (Dr. Assaad Daoud), c/o Pest Control Ltd., Bourn, Cambridge, Angleterre.
- 1944 HASSAN (Dr. Abbas Ibrahim), Département de Zoologie, Faculté des Sciences, Université Fouad I<sup>er</sup> (Ghizeh, Orman), 80, Sharia Saleh El-Din, Héliopolis, près le Caire.
- 1945 HASSAN (Dr. Ahmed Abdel-Gawad), Section d'Entomologie, Faculté d'Agriculture, Université Farouk I<sup>er</sup>, Camp de César, Alexandrie.



- 1928 HASSAN (Dr. Ahmed Salem), Professeur de Zoologie et d'Entomologie à la Faculté d'Agriculture, Université Fouad I<sup>er</sup>, Sharia El-Madares, Ghizeh, près le Caire.
- 1944 HASSAN (Mahrus Saleh), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1940 HIFNAOUI Pacha (S.E. le Prof. Mahmoud Tewfik), Conseiller Technique du Ministère de l'Agriculture et Président de la Société Fouad I<sup>er</sup> d'Entomologie, Sharia Lazogly, Héliouan, près le Caire.
- 1949 HOARE (Geoffrey S.), c/o Turf Club, 19, Sharia Adly Pacha, au Caire.
- 1927 HOUSNY (Mahmoud), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1943 HUSSEIN (Mohamed), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1938 IBRAHIM (Abdel-Hamid Ibrahim), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Guizeh), près le Caire.
- 1940 IBRAHIM (Ahmed Housny), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1948 IBRAHIM (Mohamed Mahmoud), Laboratoire des Insectes Parasites, Cotton Research Board, Ghizeh (Orman), près le Caire.
- 1944 IMPERIAL CHEMICAL INDUSTRIES (EGYPT), S.A., 15, Midan Mohamed Aly, P.O. Bag, Alexandrie.
- 1936 IMPERIAL CHEMICAL INDUSTRIES (EGYPT), S.A., 26, Sharia Chérif Pacha, P.O. Bag, au Caire.
- 1928 IZZET Bey (Mohamed), 14, Midan El-Daher, au Caire.
- 1927 KAMAL (Dr. Mohamed), Professeur d'Entomologie à la Faculté des Sciences, Université Farouk I<sup>er</sup> (Moharrem Bey), 7, Sharia Saïd Pacha, Gianaclis, Ramleh, Alexandrie.
- 1922 KAOURK (Elias A.), Avocat, c/o Egyptian Markets Company Ltd, 14, Sharia Mohamed Farid Bey (ex Emad El-Dine), au Caire.
- 1943 KEFL (Ahmed Hassanein El-), Démonstrateur au Département d'Entomologie, Faculté d'Agriculture, Université Fouad I<sup>er</sup>, Sharia El-Madares, Ghizeh, près le Caire.
- 1949 KEIMER (Dr. Louis), Professeur d'Egyptologie à la Faculté des Lettres, Université Fouad I<sup>er</sup>, 17, Sharia Youssef El-Guindi, au Caire.
- 1938 KLEIN (Dr. H.Z.), Agricultural Research Station, Boîte Postale N° 15, Rehovoth, Palestine.

- 1923 LABORATOIRES D'HYGIÈNE PUBLIQUE (Bibliothèque), Sharia El-Sultan Hussein, au Caire.
- 1931 LAND BANK OF EGYPT (Monsieur l'Administrateur-Directeur), Boîte Postale N° 614, Alexandrie.
- 1944 LEAN (Owen Bevan), Old Forge Cottage, Winkfield, Windsor, Angleterre.
- 1931 LYCÉES FRANÇAIS (Monsieur le Proviseur), 2-4, Sharia Youssef El-Guindi, au Caire.
- 1948 MACRI (Dr. Giuseppe), 12, Sharia Nouzha, Héliopolis, près le Caire.
- 1932 MADWAR Bey (Dr. Saadallah Mohamed), Directeur Général du Département des Maladies Endémiques, Ministère de l'Hygiène Publique, Sharia El-Falaki, au Caire.
- 1948 MAHER (Abdel Meneim), University College London, London University, Londres, Angleterre.
- 1927 MANSOUR (Prof. Dr. Kamel), D. Sc., Département de Zoologie, Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.
- 1947 MEYMARIAN (Albert T.), Directorate of Agriculture, Baghdad, Iraq.
- 1921 MISTIKAWY (Abdel Megid El-), Société Royale d'Agriculture, Boîte Postale N° 63, au Caire.
- 1945 MOAZZO (Polychronis Georges), 2, Sharia Young, Alexandrie.
- 1926 MOHAMED (Kassem), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1944 MORCOS (Dr. Georges), Gezira Research Farm, Wad Medani, Soudan.
- 1929 MOSSERI (Dr. Henri), 25, Sharia Talaat Harb Pacha, au Caire.
- 1944 MOURSİ (Dr. Abdel-Fattah Aly), Attaché Agricole, c/o Ambassade d'Egypte, Washington, Etats-Unis.
- 1943 NAKHLA (Naguib), Assistant Technique, Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1942 OKBI (Mahmoud Ismail El-), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1944 PALMONI (J.), Beth Gordon, Daganian A, P.O. Kinneret, Palestine.
- 1939 PANTOS (Jean G.), Ingénieur Agronome, Boîte Postale N° 1074, Elisabethville, Congo Belge.
- 1944 PLANTA & C° (J.), Boîte Postale N° 450, Alexandrie.
- 1928 PRIESNER (Prof. Dr. H.), Expert Entomologiste, Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1942 RAWHY (Soheil Hussein), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.

- 1932 RIVNAY (E.), P.O.Box 91, Rehovoth, Palestine.
- 1943 RIZKALLAH (Ramses), Assistant Technique, Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1925 ROYAL ENTOMOLOGICAL SOCIETY OF LONDON (The), 41, Queen's Gate, South Kensington, Londres, S.W. 7, Angleterre.
- 1948 SABET FRÈRES & Co. (Les Fils de D. Sabet), 9, Sharia Mohamed Farid Bey (ex Emad El-Dine), Boîte Postale N° 966, au Caire.
- 1947 SAGAN (Jean), Zoologiste, c/o J. Domanski, Banknock House, Banknock (Stirlingshire), Ecosse, Angleterre.
- 1943 SAMAK (Mohamed Mohamed), Assistant Technique, Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1941 SAWAF (Saleh Kamel El-), Faculté d'Agriculture, Université Farouk I<sup>er</sup>, Camp de César, Alexandrie.
- 1936 SAYED (Dr. Mohamed Tahier El-), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1938 SHAFIK Bey (Dr. Mohamed), Directeur Technique de la Société Financière et Industrielle d'Egypte, Boîte Postale N° 7, Kafr-Zayat, Basse-Egypte.
- 1948 SHALABY (Fathy Mohamed), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- 1924 SHAW (Fred), Northgate, Sherborne, Dorset, Angleterre.
- 1938 SOCIÉTÉ DU NAPHTHE, S.A. (A.I. Mantacheff & Co.), 33, Sharia Chérif Pacha, Boîte Postale N° 313, au Caire.
- 1921 SOCIÉTÉ ROYALE D'AGRICULTURE, Laboratoire d'Entomologie de la Section Technique, Boîte Postale N° 63, au Caire.
- 1934 SOLIMAN Bey (Prof. Dr. Hamed Seleem), Doyen de la Faculté d'Agriculture, Université Fouad I<sup>er</sup>, Sharia El-Madares, Ghizeh, près le Caire.
- 1928 SOLIMAN (Dr. Labib Boutros), Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.
- STOWER (W.J.), Desert Locust Survey, c/o Department of Agriculture, B.A.E., Asmara, Erythrée.
- 1946 TAHER (Mahmoud), Section d'Entomologie, Ministère de l'Agriculture, Ghizeh (Dokki), près le Caire.
- 1926 TEWFIK (Mohamed), Chef de Laboratoire et Conservateur des collections entomologiques de la Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.

- 1935 TRACTOR AND ENGINEERING COMPANY, S.A.E. (The), 18, Sharia Mohamed Farid Bey. (ex Emad El-Dine). Boîte Postale N° 366, au Caire.
- 1945 TRIANTAPHYLIDIS (Nicolas P.), Assistant technique, Bureau de l'Attaché Agricole, Embassade d'Amérique, Athènes, Grèce.
- 1947 WATERSTON (A.R.), Entomologiste Conseil du B.M.E.O., 10, Sharia Tolumbat, Garden City, au Caire.
- 1912 WILKINSON (Richard), Immeuble Baehler, 157, Sharia Fouad I<sup>er</sup>, Zamalek, au Caire (Ouest).
- 1947 WILTSHIRE (E.P.), c/o Consulat Britannique, Shiraz, Iran.
- 1946 ZAAZOU (Dr. Hussein), Faculté d'Agriculture, Université Farouk I<sup>er</sup>, Camp de César, Alexandrie.
- ZAHAR (A.R.), Chef du Service du Contrôle des Mouches, Section d'Eradication des Insectes, Ministère de l'Hygiène Publique, au Caire.
- 1948 ZAKI (Mademoiselle Malaka), Département d'Entomologie, Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.
- 1943 ZAKI (Mikhaïl), Section d'Entomologie, Musée Agricole Fouad I<sup>er</sup>, Dokki (Ghizeh), près le Caire.
- 1944 ZERVUDACHI (Emmanuel), Boîte Postale N° 1277, Alexandrie.
1938. ZOHEIRY Bey (Mohamed Soliman El-), Directeur-Général de la Section d'Entomologie, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.

#### Envois divers

Bibliothèque du Cabinet de SA MAJESTÉ LE ROI, Palais d'Abdine, au Caire.

Bibliothèque privée de SA MAJESTÉ LE ROI (Monsieur le Conservateur de la), Palais de Koubbeh, près le Caire.

Son Excellence le Ministre de l'Agriculture, Dokki (Ghizeh), près le Caire.

Son Excellence le Président de la Cour des Comptes, au Caire.

Son Excellence le Président du Conseil d'Administration de la Société Royale d'Agriculture, Boîte Postale N° 63, au Caire.

Monsieur l'Administrateur-Délégué du Crédit Foncier Egyptien, 35, Sharia Abdel Khalek Saroit Pacha, au Caire.

Son Excellence le Président du Conseil d'Administration de la Banque Misr, 151, Sharia Mohamed Farid Bey (ex Emad El-Dine), au Caire.

Monsieur le Directeur Général de l'Imperial Chemical Industries (Egypt), 26, Sharia Chérif Pacha, au Caire.



Monsieur le Directeur Général de la Société Financière et Industrielle d'Egypte, 2, Sharia Fouad I<sup>er</sup>, Alexandrie.

Son Excellence le Sous-Secrétaire d'Etat, Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.

Son Excellence le Secrétaire-Général du Ministère de l'Agriculture, Dokki (Ghizeh), près le Caire.

Son Excellence l'Administrateur Général de la Khassa Royale, Palais d'Abdine, au Caire.

Bibliothèque de l'Institut Fouad I<sup>er</sup> du Désert, c/o Son Excellence l'Administrateur Général de la Khassa Royale, Palais d'Abdine, au Caire.

Son Excellence le Directeur du Cabinet Européen de Sa Majesté le Roi, Palais d'Abdine, au Caire.

Bibliothèque Egyptienne, Midan Bab El-Khalq, au Caire.

Bibliothèque du Musée Agricole Fouad I<sup>er</sup>, Dokki (Ghizeh), près le Caire.

Nature, Macmillan and Co. Ltd., St. Martin's Street, London, W.C. 2. Angleterre.

Commission Internationale des Industries Agricoles, 18, Avenue de Villars, Paris (VII<sup>e</sup>), France.

Science Cooperation Office (Unesco) Middle-East, 8, Sharia El-Salamlik, Garden City, au Caire.

### Echanges

#### *Afrique Occidentale Française*

Institut Français d'Afrique Noire, Boîte Postale N° 206, Dakar.

#### *Afrique du Sud*

South African Museum, P.O. Box 61, Cape Town.

Department of Agriculture of the Union of South Africa (The Agricultural Journal of the Union of South Africa), Pretoria.

Department of Agriculture of the Union of South Africa, Division of Entomology, P.O. Box 513, Pretoria.

The Director, The Transvaal-Museum, P.O. Box 413, Pretoria.

#### *Algérie*

Société d'Histoire Naturelle de l'Afrique du Nord, c/o Monsieur L. Faurel, Laboratoire de Botanique, Faculté des Sciences d'Alger, Alger.

Office National Anti-Acrdien, Institut Agricole d'Algérie, Maison-Carrée, Alger.

*Allemagne*

Deutsche Entomologische Gesellschaft, 43, Invalidenstrasse, Berlin (IV).  
 Senckenbergische Naturforschende Gesellschaft (Bibliothek), Senckenberg-Anlage 25, Frankfurt am Main.

Bücherei des Zoologischen Museums, 43, Invalidenstrasse, Berlin N 4.  
 Gesellschaft für Vorratsschutz E.V. (Mitteilungen der), 31, Zimmermannstrasse, Berlin-Steglitz.

Bücherei der Biologischen Anstalt für Land- und Forstwirtschaft, 19, Königin-Luise-Str., Berlin-Dahlem.

Deutsches Entomologisches Institut der Kaiser Wilhelm Gesellschaft (Arbeiten über morphologische und taxonomische Entomologie, Arbeiten über physiologische und angewandte Entomologie), 20, Gossler Strasse, Berlin-Dahlem.

Deutsche Kolonial und Uebersee-Museum, Bahnhofsplatz, Brême.

Naturhistorischer Verein der Rheinlande und Westfalens (Entomologische Blätter, Decheniana), 41, Bennauerstrasse, Bonn (22c).

Zoologische Sammlung des Bayerischen Staates, Münchner Entomologischen Gesellschaft E.V. (Mitteilungen der), 67, Menzingerstrasse, Zone Américaine, Munich 38.

*Angleterre*

The Commonwealth Institute of Entomology, Publication Office and Library (Review of Applied Entomology), 41, Queen's Gate, London, S.W. 7.

Zoological Museum (Novitates Zoologicae), Tring Park, Tring, Herts.

The Apis Club (The Bee World), The Way's End, Foxton, Royston, Herts.

Cambridge Philosophical Society, New Museums, Free School Lane, Cambridge.

The Director, Anti-Locust Research Centre, British Museum (Natural History), London, S.W. 7.

The Librarian, The Zoological Society of London, Regent's Park, London, N.W. 8.

The Librarian, Department of Entomology, University Museum, Oxford.

*Argentine*

Instituto Biologico de la Sociedad Rural Argentina, Buenos Aires.

Sociedad Cientifica Argentina, 11.45, Calle Santa Fé, Buenos Aires.

Sociedad Entomologica Argentina, 267, Calle Maipu, Buenos Aires.

Museo Argentino de Ciencias Naturales « Bernardino Rivadavia », Casilla 470, Avenida Angel Gallardo, Buenos Aires.

Ministerio de Agricultura (Boletin del Ministerio de Agricultura de la Nacion), Bibliotheca, 974, Paseo Colon, Buenos Aires.

Instituto Miguel Lillo, Universidad National de Tucuman, Calle Miguel Lillo N° 205, Tucuman.

Asociacion Argentina de Artropodologia, Lacar 3722, Buenos Aires.

*Australie*

The Australian Museum (The Librarian), Sydney, N.S.W.

Council for Scientific and Industrial Research, 314, Albert Street, East Melbourne, C.2.

The Entomologist's Office, Department of Agriculture, Sydney, N.S.W.

The Public Library, Museum, and Art Gallery of South Australia (The South Australian Museum), Box 386 A, G.P.O., Adelaide, South Australia.

The Library of the Division of Economic Entomology, P.O. Box N° 109, Canberra City, F.C.T.

The Linnean Society of New South Wales, Science House, Gloucester and Essex Streets, Sydney, N.S.W.

*Autriche*

Administration-Kanzlei des Naturhistorischen Museums, Burgring 7, Vienne (I).

Zoologisch-Botanische Gesellschaft, 2, Mechelgasse, Vienne (III).

Koleopterologische Rundschau, c/o Zoologisch-Botanische Gesellschaft, 2, Mechelgasse, Vienne (III).

*Belgique*

Société Entomologique de Belgique, Musée Royal d'Histoire Naturelle de Belgique, 31, Rue Vautier, Bruxelles, 4.

Société Scientifique de Bruxelles, Secrétariat, 11, Rue des Récollets, Louvain.

Bulletin de l'Institut Agronomique et des Stations de Recherches de Gembloux, Bibliothèque de l'Institut Agronomique de l'Etat. Gembloux.

Lambillionea, Revue Mensuelle Belge d'Entomologie, c/o M. Lucien Berger, 2, Vallée des Artistes, Linkebeek, Bruxelles.

Annales du Musée du Congo Belge, Tervuren.

Annales de Gembloux (Revue des Ingénieurs Agronomes de Gembloux), c/o Monsieur René Georlette, 207, Avenue Richard Neyberg, Bruxelles 2.

*Brésil*

Museu National, Quinta da Boa Vista, Rio de Janeiro.

Instituto Biologico, Bibliotheca, Caixa 119-A, São Paulo.

Instituto Oswaldo Cruz, Caixa de Correio 926, Rio de Janeiro.

Arquivos do Serviço Florestal, 1008, Jardim Botânico, Rio de Janeiro.

Academia Brasileira de Ciencias (Anais da Academia Brasileira de Ciencias), Caixa Postal 229, Rio de Janeiro.

Faculdade Nacional de Filosofia, 40, Avenida Presidente Antonio Carlos, Rio de Janeiro.

### *Bulgarie*

Institutions Royales d'Histoire Naturelle, Musée Royal d'Histoire Naturelle, Palais Royal, Sofia.

Société Entomologique de Bulgarie, Musée Royal d'Histoire Naturelle, Palais Royal, Sofia.

Société Bulgare des Sciences Naturelles, Musée Royal d'Histoire Naturelle, Palais Royal, Sofia.

### *Canada*

Entomological Division, Science Service, Department of Agriculture, Ottawa, Ontario.

Bibliothèque du Ministère Fédéral de l'Agriculture, Edifice de la Confédération, Ottawa.

Entomological Society of Ontario (The Canadian Entomologist, and Reports), Guelph, Ontario.

Nova Scotian Institute of Science, Halifax.

### *Chine*

The Lingnan Science Journal, Lingnan University, Canton.

Bulletin of the Biological Department, Science College, National Sun Yat-Sen University, Canton.

Bureau of Entomology of the Chekiang Province, West Lake, Hangchow.

### *Chypre*

The Cyprus Agricultural Journal (The Office of the Gouvernement Entomologist), Nicosia.

### *Colombie (République de), Amérique du Sud*

Facultad Nacional de Agronomia (Biblioteca de la), Medellin.

### *Cuba*

Sociedad Cubana de Historia Natural « Felipe Poey » (Memorias) c/o Dr. Carlos Guillermo Agnayo, 25 N° 254, Vedado, La Havane.

*Danemark*

Entomologisk Forening, Zoologisk Museum, Krystalgade, Copenhague.

*Egypte*

Ministère de l'Agriculture, Bibliothèque de la Section d'Entomologie, Dokki (Ghizeh), près le Caire.

Société Royale d'Agriculture, Bibliothèque de la Section Technique, Boîte Postale N° 63, au Caire.

Union des Agriculteurs d'Egypte, 25, Sharia Talaat Harb Pacha, au Caire.

Bibliothèque du Musée Agricole Fouad I<sup>er</sup>, Dokki (Ghizeh), près le Caire.

Académie Egyptienne des Sciences (Monsieur le Secrétaire Honoraire de l'), Dar El-Hikma, 42, Sharia El-Kasr El-Aini, au Caire.

Feuilles Agricoles, c/o Lycée Français, Chatby, Alexandrie.

Al-Fellaha, Boîte Postale N° 2047, au Caire.

Société Royale de Géographie d'Egypte, Bureau Postal de Kasr El-Doubara, au Caire.

The Journal of the Royal Egyptian Medical Association, Kasr El-Aini Post Office, au Caire.

Société Fouad I<sup>er</sup> d'Economie Politique, de Statistique et de Législation, Boîte Postale N° 732, au Caire.

Institut d'Egypte, 13, Sharia El-Sultan Hussein, au Caire.

Bibliothèque de la Faculté des Sciences, Université Fouad I<sup>er</sup>, Abbassieh, au Caire.

The Marine Biological Station, Ghardaqua (Red Sea), Suez.

*Equateur (République de l'), Amérique du Sud*

Director General de Agricultura (Revista del Departamento de Agricultura), Quito.

Boletín de la Sección Agrícola del Banco Hipotecario del Ecuador, Apartado 685, Quito.

*Espagne*

Instituto Nacional de 2<sup>a</sup> Ensenanza de Valencia, Laboratorio de Hidrología Española, Valencia.

Junta para ampliación de Estudios e Investigaciones Científicas, 4, Duque de Medinaceli, Madrid.

Eos, Revista Española de Entomología, Instituto Español de Entomología, Hipódromo, Madrid (VI).



Real Academia de Ciencias y Artes, 9, Rambla de los Estudios, Barcelona (II).

Real Sociedad Espanola de Historia Natural (Biblioteca), Palacio de Bellas Artes, 84, Avenida del Generalisimo, Madrid.

Estacion de Fitopatologia Agricola, 15, Miguel Angel, Madrid.

Instituto de Ciencias Naturales, Museo Municipal de Ciencias Naturales, Apartado de Correos 593, Barcelone.

### *Etats-Unis*

The Research Library, Buffalo Society of Natural Sciences, Buffalo Museum of Science, Humboldt Park, Buffalo, New-York.

University of Illinois Library, Exchange Division, Urbana, Illinois.

The Library, American Museum of Natural History, Central Park West at 79th Street, New-York City.

The Ohio State University (The Ohio Journal of Science), Columbus 10, Ohio.

California Academy of Science Library (Pan-Pacific Entomologist), Golden Gate Park, San Francisco, 18, California.

Academy of Natural Sciences, Entomological Section, Lagon Square, Philadelphia.

Experiment Station of the Hawaiian Sugar Planters' Association, P.O. Box 411, Honolulu, T.H., Hawaii.

Hawaiian Entomological Society (The Secretary), 1527, Keeaumoku Street, Honolulu 4, Hawaii.

Carnegie Museum, Department of the Carnegie Institute, Pittsburgh, Pennsylvania.

American Entomological Society (The), 1900, Race Street, Philadelphia, 3, Penna.

United States Department of Agriculture (The Library), Washington 25, D.C.

General Library, University of Michigan, Ann Arbor, Michigan.

United States National Museum, c/o Smithsonian Institution, Washington, D.C.

Smithsonian Institution Library, Washington, D.C.

New-York State College of Agriculture (The Library), Cornell University, Ithaca, New-York.

New-York Academy of Sciences, New-York.

University of California (The Library), College of Agriculture, Agricultural Experiment Station, Berkeley 4, California.

University of California, Citrus Experimental Station Library, Riverside California.

Wisconsin Academy of Sciences, Arts, and Letters, 120, Wisconsin State Historical Building, Madison, Wisconsin.

The Library, Minnesota Agricultural Experiment Station, University Farm, Saint Paul, Minnesota.

Museum of Comparative Zoology, Harvard College, Cambridge, Mass.

The Philippine Agriculturist (The Library of the College of Agriculture). Agricultural College, Laguna, Philippine Islands.

The Wasmann Collector (The Managing Director), Department of Biology, University of San Francisco, San Francisco 17, California.

The Reading Public Museum and Art Gallery (The Librarian), Reading, PA.

Editorial Office, The American Midland Naturalist, University of Notre Dame, Notre Dame, Indiana.

Marine Biological Laboratory (The Library), Woods Hole, Mass.

The Library, State College of Washington, Agricultural Experiment Station, Pullman, Washington.

### *Finlande*

Societas Entomologica Helsingforsiensis (Notulae Entomologicae), Museum Zoologicum, Helsingfors.

Societas pro Fauna et Flora Fennica, Kaserngatan 24, Helsinki.

Societas Zoologica-Botanica Fennica Vanamo, Säätytalo, Snellmaninkatu 9-11, Helsinki.

Société Entomologique de Finlande (Annales Entomologici Fennici), Institut de Zoologie Agricole et Forestière de l'Université, Snellmaninkatu 5, III kerr., Helsinki.

### *France*

L'Echange (Revue Linnéenne), Les Guerreux, par Saint-Agnan (Saône et Loire).

Revue française d'Entomologie, Museum National d'Histoire Naturelle (Entomologie), 45 bis, Rue de Buffon, Paris (V°).

Revue Scientifique du Bourbonnais et du Centre de la France, 22, Avenue Meunier, Moulins (Allier).

Société d'Etudes des Sciences Naturelles de Nîmes, 6, Quai de la Fontaine, Nîmes (Gard).

Société de Pathologie Végétale et d'Entomologie Agricole de France, Institut Pasteur, 25, Rue du Docteur Roux, Paris (XV°).

Société Linnéenne de Bordeaux, Athénée, 53, Rue Des Trois Conils, Bordeaux.

Société Linnéenne de Lyon, 33, Rue Bossuet, Lyon (VI°)

Société des Sciences Naturelles de l'Ouest de la France, Nantes (Loire Inférieure).

Association des Naturalistes de Levallois-Perret, 153, Rue du Président Wilson (Domaine de la Planchette), Levallois-Perret (Seine).

Société Linnéenne du Nord de la France, 81, Rue Lemerchier (M. Pauchet), Amiens.

Société Géologique de Normandie et des Amis du Museum du Havre, Hôtel des Sociétés Savantes, 56, Rue Anatole France, Le Havre (Seine Inférieure).

Annales Scientifiques de Franche-Comté, 10, Rue de la Convention, Besançon (Doubs).

Société d'Histoire Naturelle de Toulouse (Monsieur P. Bonnet, Bibliothécaire de la), Faculté des Sciences, Toulouse.

Société Entomologique de France, Institut National Agronomique, 16, Rue Claude Bernard, Paris (V°).

Société d'Etudes Scientifiques de l'Aude, Carcassonne (Aude).

Annales des Epiphyties, Service de Documentation, Centre National de Recherches agronomiques, Route de Saint-Cyr, à Versailles (Seine et Oise).

Museum National d'Histoire Naturelle, Bibliothèque, 8, Rue de Buffon, Paris (V°).

Société de Zoologie Agricole (Revue de Zoologie Agricole et Appliquée), Faculté des Sciences, Institut de Zoologie, 40, Rue Lamartine, Talence (Gironde).

L'Entomologiste (Monsieur le Rédacteur en Chef de), Muséum National d'Histoire Naturelle, Entomologie, 45 bis, Rue de Buffon, Paris (V°).

Rédaction du Bulletin Analytique, Service de Documentation du Centre National de la Recherche Scientifique, Ministère de l'Education Nationale, 45, Rue d'Ulm, Paris (V°).

Institut des Fruits et Agrumes Coloniaux, 7, Rue Saint-Dominique, Paris (VII°).

#### *Grèce*

Institut Phytopathologique Benaki, Kiphissia (près Athènes).

Bibliothèque de l'Institut et Musée Zoologique de l'Université, Athènes.

#### *Hollande*

Nederlandsche Entomologische Vereeniging (Bibliotheek van der), Zeeburgerdijk. 21, Amsterdam (O).

Landbouwhoogeschool, Laboratorium voor Entomologie, Berg 37, Wageningen.

#### *Hongrie*

Természettudományi Múzeum, 13, Baross-utca, Budapest.

*Indes*

The Director, Zoological Survey of India (Records and Memoirs of the Indian Museum), 27, Chowringhee, Calcutta 13.

Madras Government Museum, Connemara Public Library, Egmore, Madras.

Office of the Director, Agricultural Research Institute, New Delhi.

The Honorary Secretary, Zoological Society of Bengal (Proceedings of the), 36, Ballygunge Circular Road, Calcutta 19.

*Indonésie*

Bibliotheca Bogoriensis, Centrale Natuurwetenschappelijke Bibliotheek, Grooteweg 20, Buitenzorg, Java.

*Iran*

Laboratoires du Département Général de la Protection des Plantes (Monsieur le Directeur), Ministère de l'Agriculture, Tehran.

*Italie*

Museo Civico di Storia Naturale « Giacomo Doria », 9, Via Brigata Liguria, Genova (102).

Rivista di Biologia Coloniale, 326, Viale Regina Margherita (Policlinico), Roma.

Museo Civico di Storia Naturale di Trieste (Atti del), 4, Piazza Hortis, Trieste (10).

Società dei Naturalisti in Napoli, Università di Napoli, Via Mezzocannone, Napoli.

Società Entomologica Italiana, Museo Civico di Storia Naturale, 9, Via Brigata Liguria, Genova (102).

Società Adriatica di Scienze Naturali, 7, Via dell'Annunziata, Trieste.

La Stazione di Entomologia Agraria (Redia), 15-17, Via Romana, Firenze.

La Stazione Sperimentale di Gelsicoltura e Bachicoltura di Ascoli Piceno.

Istituto Zoologico dell'Università di Napoli (Biblioteca del), Via Mezzocannone, Napoli.

Laboratorio di Zoologia Generale e Agraria della Facoltà Agraria, Portici (Napoli).

Laboratorio di Entomologia Agraria di Portici (Bolletino del), Portici (Napoli).

Institut International d'Agriculture (Bibliothèque de l'), Villa Umberto I, Rome.

Società italiana di Scienze Naturali, Palazzo del Museo Civico di Storia Naturale, Corso Venezia, Milano.

Istituto di Zoologia dell'Università di Genova (Bolletino dei Musei di Zoologia e di Anatomia comparata), 5, Via Balbi, Genova.

Società dei Naturalisti e Matematici di Modena, presso l'Università, Modena.

Istituto di Entomologia dell'Università, 6, Via Filippo Re, Bologna (125).

Accademia di Scienze, Lettere ed Arti in Padova, 15, Via Accademia, Padova (Veneto).

Museo di Storia Naturale della Venezia Tridentina (« Memorie del Museo di Storia Naturale della Venezia Tridentina » e « Studi Trentini di Scienze Naturali »), Casella Postale 95, Trento.

Istituto Agronomico per l'Africa (Rivista di Agricoltura subtropicale e tropicale), Ministero dell'Africa, 13, Via Fibonacci, Firenze.

Università degli Studi (Bolletino di Zoologia Agraria e Bachicoltura), 2, Via Celoria, Milano (133).

Società Veneziana di Storia Naturale (presso Sig. Antonio Giordani Soika), S. Marco 254, Venezia.

### *Japon*

Saghalien Central Experiment Station, Konuma, Saghalien.

The Chara Institute for Agricultural Research, Library, Kurashiki, Okayama-Ken.

Imperial Agricultural Experiment Station (Journal of the), Nishigahara, Tokyo.

Department of Agriculture, Government Research Institute, Taihoku, Formosa.

The Kansai Entomological Society, c/o N. Tosawa, Shibakawa-Noen, Kotoen, Mukogun, Hyogo-ken.

« Mushi », Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka.

Takeuchi Entomological Laboratory (Tenthredo, Acta Entomologica), Shinomyia Yamashina, Kyoto.

### *Kenya Colony (British East Africa)*

East Africa Natural History Society (The Hon. Secretary), Coryndon Memorial Museum, P.O. Box 658, Nairobi.

### *Libye*

Museo Libico di Storia Naturale, Piazza Santa Maria degli Angeli Tripoli d'Africa.



*Maroc*

Société des Sciences Naturelles du Maroc, Institut Scientifique Chérifien,  
Avenue Biarnay, Rabat.

Service de la Défense des Végétaux (Monsieur le Chef du), 65 bis, Avenue  
de Témara, Rabat.

*Mexique*

Junta Nacional Directora de la Campana contra la Langosta (Junosta),  
Biblioteca, Departamento Directivo, Veracruz.

Biblioteca del Instituto Biotechnico, Calzada Mexico-Tacuba N° 295, Col.  
Anahuac, D.F.

Biblioteca del Instituto de Biología, Chapultepec (Casa del Lago), Me-  
xico, D.F.

Anales de la Escuela Nacional de Ciencias Biológicas, Apartado Postal  
7016, Mexico, D.F.

*Norvège*

Tromso Museum Library, Tromso.

*Panama (République de)*

Departamento Seccional de Agricultura (Boletín Agrícola), Panama.

*Pologne*

Musée Zoologique Polonais, ul. Wilcza N° 64, Varsovie.

Société Polonaise d'Entomologie (Bulletin Entomologique de la Polo-  
gne), ul. Sienkiewicza 21, Instytut Zoologiczny Uniwersytetu we Wrocławiu,  
Wrocław.

Institut des Recherches Forestières (Bibliothèque), 52-54, Rue Wawels-  
ka, Varsovie (22).

Uniwersytet Marii Curie-Skłodowskiej, Biuro Wydawnictw, 5, Plac Li-  
tewski, Lublin.

Acta Musei Historiae Naturalis, Musée d'Histoire Naturelle, 17, Sław-  
kowska, Krakow.

*Porto-Rico*

Institute of Tropical Agriculture, P.O. Box 1195, Mayaguez.

*Portugal*

Société Portugaise des Sciences Naturelles, Faculté des Sciences, Rue de  
l'Ecole Polytechnique, Lisbonne.

Société Portugaise des Sciences Naturelles (Bibliothèque de la), Institut de Physiologie, Faculté de Médecine, Champ des Martyrs de la Patrie, Lisbonne.

Museum Zoologique de l'Université de Coimbra, Largo Marquês de Pombal, Coimbra.

Associação da Filosofia Natural (Bibliotecario da), Faculdade de Ciencias, Porto.

Instituto de Medicina Tropical (Monsieur le Directeur de l'), Lisbonne.

### *Roumanie*

Société Transylvanienne des Sciences Naturelles (Siebenbürgischer Verein für Naturwissenschaften), Hermannstadt, Sibiu.

Academia Romana, Bibliothèque, Calea Victoriei, 125, Bucarest.

### *Russie (U.R.S.S.)*

Société Entomologique de Russie (Revue d'Entomologie de l'U.R.S.S.), Musée Zoologique de l'Académie des Sciences, Léninegrad.

Bibliothèque de l'Académie des Sciences de l'Ukraine, 58a, Rue Korolenko, Kiew (Ukraine).

Société des Naturalistes de Kiew, 37-10, Rue Korolenko, Kiew (Ukraine).

Institut des Sciences Naturelles, Université M. Gorky, 1 ul. Genkelya, Zainka, Molotov (Oural).

The Lenin Academy of Agricultural Sciences, Institute for Plant Protection, 42, Herzen str., Leningrad.

Rédaction du Journal « Plant Protection », 7, Rue Tschaikovsky, Léninegrad.

Institute for controlling Pests and Diseases, Library, 7, Rue Tschaikovsky, Léninegrad 28.

### *Siam*

Department of Agriculture and Fisheries, Entomology Section, Bangkok.

### *Suède*

K. Svenska Vetenskapsakademien i Stockholm (Bibliotek), Stockholm 50.

Entomologiska Föreningen (Bibliothèque de l'), Stockholm, 50.

Göteborgs Kungl. Vetenskaps-och Vitterhets Samhälles, Göteborg.

Statens Växtskyddsanstalt, Stockholm 19.

hoin.

Bibliothèque de l'Université de Lund, Lund.

*Suisse*

Bibliothèque de la Société Entomologique Suisse, Musée d'Histoire Naturelle, Berne.

Tausch-Stelle der Naturforschenden Gesellschaft, Zentralbibliothek, Zähringerplatz 6, Zurich I.

*Tchécoslovaquie*

Societas Entomologica Cechosloveniae (Casopis), Vinicna 7, Zoolog-Ustav-Csr., Prague II.

« Sbornik » (Acta Entomologica), Section de Zoologie du Musée National, Prague, II-1700.

Bibliothèque de la Société Zoologique Tchécoslovaque, Institut de Zoologie, Vinicna 7, Prague II.

*Tunisie*

Bulletin de la Société des Sciences Naturelles de Tunisie, 2, Rue de Souk-Ahras, Tunis.

*Uruguay (République de l')*

Escuela de Veterinaria del Uruguay (Anales de la Escuela de Veterinaria del Uruguay), Itazaingo 1461, Montévideo.

Sociedad de Biología de Montevideo, Casilla de Correo 567, Montevideo.

*Yougoslavie*

Societas Entomologica Jugoslavica (Glasnik), 17, Garasaninovo ulica, Belgrade.

**Abonnement de la Société**

Bulletin of Entomological Research, The Commonwealth Institute of Entomology, 41, Queen's Gate, S.W. 7, Londres, Angleterre.

Zoological Record (Insecta), The Commonwealth Institute of Entomology, 41, Queen's Gate, South Kensington, S.W.7, Londres, Angleterre

Proceedings and Transactions of the Royal Entomological Society of London, 41, Queen's Gate, South Kensington, Londres, S.W.7, Angleterre,

Journal of the Entomological Society of Southern Africa, The Honorary Secretary, P.O. Box 103, Prétoiria, Afrique du Sud.

## PROCÈS-VERBAUX DES RÉUNIONS

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### Conférences

Durant un bref séjour en Egypte (8-26 Février 1949) et sous les auspices du British Council, Monsieur G.V.B. HERFORD, Directeur du Pest Infestation Laboratory (Department of Scientific and Industrial Research, England), a fait quatre conférences au Siège de la Société, sur les sujets ci-après :

(1) General Control Measures in Grain Storage, (2) Fumigation and Insecticides. (3) The Organisation of Control Work, (4) The Principles of Storing Grain in Silos.

### Réunion du Conseil du 23 Février 1949

Présidence de Monsieur le Professeur H.C. EFFLATOUN Bey,  
*Vice-Président.*

#### *Nécrologie :*

Le Secrétaire-Général a le regret de faire connaître le décès du Professeur Docteur A. MOCHI, survenu à Florence (Italie), le 14 Février 1949. Le défunt s'était attelé à l'étude des hyménoptères de l'Egypte, sur lesquels il a publié de nombreux travaux dans nos Bulletins.

#### *Donations :*

La Société a reçu les donations ci-après : L.Eg. 50 du CRÉDIT FONCIER EGYPTIEN, et L.Eg. 15 de l'IMPERIAL CHEMICAL INDUSTRIES.

Le Conseil remercie.

#### *Distinction Honorifique :*

Le Conseil félicite Monsieur le Docteur SAADALLAH MOHAMED MADWAR Bey pour le titre qui vient de lui être conféré, et pour sa nomination aux fonctions de Directeur Général du Département des Maladies Endémiques du Ministère de la Santé Publique.

#### *Rapports Annuels :*

Les Rapports du Secrétaire Général, du Trésorier et des Censeurs pour l'Assemblée Générale Ordinaire sont soumis au Conseil qui les approuve. La réunion de l'Assemblée est fixée au 23 Mars 1949.

**Assemblée Générale Ordinaire  
du 23 Mars 1949**

Présidence

de Monsieur le Professeur H. C. EFFLATOUN Bey, *Vice-Président*.

*Rapport du Secrétaire Général (Exercice 1948) :*

Messieurs,

Aux termes des Articles 24, 25 et 26 de nos Statuts, nous vous avons convoqués en Assemblée Générale Ordinaire pour vous présenter les Rapports du Secrétaire Général, du Trésorier et des Censeurs sur la situation morale, financière et comptable de la Société, pour donner au Conseil décharge de sa gestion, et pour procéder, par voie d'élections, au remplacement des Membres sortants du Conseil, et des deux Censeurs des comptes de l'Exercice en cours.

Messieurs,

Nous débiterons par l'observation d'une minute de silence en mémoire de notre regretté collègue Arturo Garozzo, membre de la Société dès sa fondation (1907), et décédé en Septembre dernier.

Messieurs,

Durant l'Exercice écoulé, notre contribution au développement intellectuel et scientifique du Pays a continué comme par le passé.

Les spécialistes du Ministère de l'Agriculture, le corps enseignant et les étudiants des Facultés des Sciences, d'Agriculture et de Médecine des Universités Fouad Ier et Farouk Ier, les experts de nombreuses institutions agricoles et commerciales, les délégués des départements de l'Agriculture de la Syrie, du Liban, de la Transjordanie et de l'Irak, ainsi que des savants étrangers de passage en Egypte, ont largement bénéficié de nos ressources scientifiques. Nous leur avons fourni d'innombrables renseignements, références bibliographiques, et un nombre considérable de déterminations d'insectes.

Il en est résulté toute une série de travaux, actuellement publiés dans le trente-deuxième volume de notre Bulletin, qui comprend près de 400 pages, un très grand nombre d'illustrations, et dix planches dont trois en chromogravure.



Les travaux contenus dans le Bulletin précité émanent des spécialistes du Ministère de l'Agriculture, des Facultés des Sciences (Universités Fouad Ier et Farouk Ier), de la Faculté d'Agricnlture (Université Farouk Ier), et d'autres auteurs, au total dix-neuf études originales.

Des conférences aussi nombreuses que variées ont été faites dans notre Siège.

Nous avons entrepris de compléter la formation entomologique d'un technicien de la section entomologique du Ministère de l'Agriculture. Il en est à sa troisième année, ses progrès sont incontestables.

La Société a délégué trois de ses membres respectivement aux IVE Congrès International des Maladies Tropicales et de la Malaria (Washington), XIIIe Congrès International de Zoologie (Paris), et VIIIe Congrès International d'Entomologie (Stockholm). Nous remercions ces collègues d'avoir bien voulu nous représenter.

Le Ministère de l'Agriculture nous a fait parvenir sa subvention annuelle de L.Eg. 1000.

Une donation de L.Eg. 100 nous a été faite par la Société du Naphte A. I. Mantacheff, « en appréciation des activités extrêmement utiles déployées par votre Société ». Très touchés par ce message spontané, nous renouvelons nos plus vifs remerciements à Monsieur le Directeur de la firme précitée.

Parmi les autres dons reçus figurent L.Eg. 50 de la Société Royale d'Agriculture, L.Eg. 50 du Crédit Foncier Egyptien, L.Eg. 25 de l'Imperial Chemical Industries, L.Eg. 20 de la Banque Misr, et L.Eg. 15 de la Société Financière et Industrielle d'Egypte. Aux dirigeants de ces Institutions nous renouvelons nos remerciements et l'expression de notre gratitude, et nous les prions de vouloir bien continuer à nous témoigner leur bienveillant appui.

Treize nouveaux membres ont été admis parmi nous, et cinq institutions scientifiques de l'étranger se sont inscrites pour l'échange des publications, ce qui porte à 375 le nombre actuel de nos adhérents de toutes catégories.

16622 ouvrages et brochures, dûment enregistrés, existent actuellement dans notre Bibliothèque, contre 16059 l'année précédente, soit en augmentation de 563 unités. Dix-sept d'entre-eux représentent les dons reçus, dix ont été acquis (L.Eg. 17.050), le restant provient de nos échanges avec 220 institutions entomologiques ou scientifiques de tous Pays.

Nous avons consacré L.Eg. 93.800 pour la reliure de 268 volumes.

Notre situation financière n'est pas brillante, bien que nous ayons terminé l'année avec un déficit inférieur à celui porté sur nos prévisions budgétaires, différence due à des rentrées imprévues constituées par les dons reçus et par une très bonne vente de nos publications.

Votre Trésorier vous donnera lecture du Bilan des Comptes du quarante-et-unième Exercice Social, dûment vérifié et approuvé par vos Censeurs, ainsi que des Prévisions Budgétaires pour l'Exercice 1949, dont l'excédent des dépenses sur les recettes sera de L.Eg. 424, qu'il faudra encore prélever sur la Réserve Générale.

Aux termes de l'Article 13 de nos Statuts, le Conseil est annuellement renouvelé par tiers. Les membres sortants cette année sont les suivants : Messieurs le Professeur Docteur H. Priesner, R. Wilkinson, Abdel Meguid El-Mistikawy, et Edgard Chakour. Ils sont rééligibles.

Vos Censeurs, Messieurs E.A. Kaourk et Elhamy Greiss, sont également rééligibles.

En terminant, nous dédions respectueusement nos pensées à notre Auguste Souverain, Sa Majesté le Roi Farouk Ier, et nous Lui exprimons nos sentiments de profond dévouement et nos vœux les plus fervents.

*Signé : A. ALFIERI.*

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*Rapport du Trésorier :***Situation au 31 Décembre 1948**

## DÉPENSES

## RECETTES

|                                      | L.E. | MM. |  | L.E. | MM. |
|--------------------------------------|------|-----|--|------|-----|
| Loyers 1947-1949.. . . . .           | 3    | 005 | Subvention Ministère Agriculture                 | 997  | 995 |
| Impôts et Assurances . . . . .       | 84   | 416 | Donations. . . . .                               | 260  | 000 |
| Frais Généraux et Entretien. . . . . | 267  | 327 | Cotisations des Membres. . . . .                 | 110  | 855 |
| Personnel . . . . .                  | 1056 | 800 | Droits d'Inscriptions. . . . .                   | 2    | 600 |
| Publications . . . . .               | 648  | 925 | Intérêts de Banque . . . . .                     | 18   | 547 |
| Bibliothèque . . . . .               | 121  | 914 | Coupons Emprunt National. . . . .                | 583  | 520 |
| Bâtiment . . . . .                   | 34   | 405 | Vente Publications . . . . .                     | 147  | 680 |
|                                      |      |     | Encaissements divers. . . . .                    | 10   | 000 |
|                                      |      |     | Déficit prélevé sur la Réserve Générale. . . . . | 85   | 595 |
|                                      | 2216 | 792 |  | 2216 | 792 |

## ACTIF

## PASSIF

|  | L.E.  | MM. |                            | L.E.  | MM. |
|--|-------|-----|----------------------------|-------|-----|
| Immeuble Social . . . . .              | 1     | 000 | Réserve Générale . . . . . | 15519 | 329 |
| Mobilier . . . . .                     | 1     | 000 |                            |       |     |
| Bibliothèque . . . . .                 | 1     | 000 |                            |       |     |
| Collections . . . . .                  | 1     | 000 |                            |       |     |
| Laboratoires . . . . .                 | 1     | 000 |                            |       |     |
| Banque Nationale d'Egypte . . . . .    | 2322  | 070 |                            |       |     |
| Portefeuille Emprunt National. . . . . | 13187 | 630 |                            |       |     |
| Compagnie du Gaz. . . . .              | 4     | 629 |                            |       |     |
|  | 15519 | 329 |                            | 15519 | 329 |

Portefeuille Titres en dépôt à la Banque Nationale d'Egypte : 18000  
L.Eg. Emprunt National 3 1/4 % (1963-1973).

*Signé :* R. WILKINSON.

*Rapport des Censeurs :*

En exécution du mandat que vous avez bien voulu nous confier, nous avons l'honneur de porter à votre connaissance que nous avons vérifié les Comptes de la Société Fouad Ier d'Entomologie pour l'année finissant le 31 Décembre 1948, avec les registres et documents y relatifs.

Nous certifions que le Bilan reflète d'une façon exacte et sincère la situation de la Société telle qu'elle ressort des registres et des explications qui nous ont été données.

*Signé : E. A. KAOURK et ELHAMY GREISS.*

*Prévisions Budgétaires pour l'année 1949 :*

| RECETTES                            |       |     | DÉPENSES                 |       |     |
|-------------------------------------|-------|-----|--------------------------|-------|-----|
|                                     | L. E. | MM. |                          | L. E. | MM. |
| Subvention Ministère Agriculture .  | 1000  | 000 | Loyer . . . . .          | 1     | 000 |
| Donations . . . . .                 | 160   | 000 | Impôts . . . . .         | 57    | 000 |
| Cotisations des Membres . . . . .   | 110   | 000 | Assurances . . . . .     | 27    | 000 |
| Coupons Emprunt National . . . . .  | 583   | 000 | Frais Généraux . . . . . | 250   | 000 |
| Intérêts de Banque . . . . .        | 18    | 000 | Entretien . . . . .      | 50    | 000 |
| Vente Publications . . . . .        | 5     | 000 | Personnel . . . . .      | 1213  | 000 |
| Prélèvement sur la Réserve Générale | 424   | 000 | Publications . . . . .   | 560   | 000 |
|                                     |       |     | Bibliothèque . . . . .   | 100   | 000 |
|                                     |       |     | Imprévus . . . . .       | 42    | 000 |
|                                     | 2300  | 000 |                          | 2300  | 000 |

*Signé : R. WILKINSON.*

*Décisions :*

1) Le Procès-Verbal de l'Assemblée Générale Ordinaire du 31 Mars 1948 est lu et confirmé.

2) Les Rapports du Secrétaire Général, du Trésorier et des Censeurs pour l'Exercice 1948, ainsi que les Prévisions Budgétaires pour l'Exercice 1949, sont adoptés.

3) L'Assemblée donne décharge au Conseil de sa gestion pour l'Exercice 1948.

*Elections :*

Messieurs RICHARD WILKINSON, le Professeur Docteur H. PRIESNER, et EDGARD CHAKOUR, membres du Conseil sortants, sont réélus. Monsieur le Docteur MAHMOUD HAFEZ est élu en remplacement de Monsieur ABDEL MEGID EL-MISTIKAWY. Leur mandat a une durée de trois ans.

Messieurs E. A. KAOURK et ELHAMY GREISS sont réélus Censeurs des Comptes de la Société pour l'Exercice 1949.

*Félicitations et Remerciements :*

Sur la proposition du Président, l'Assemblée Générale Ordinaire félicite les Membres du Conseil et les Censeurs élus ou réélus. Elle vote une motion de remerciements à l'adresse de Messieurs le Secrétaire Général, le Trésorier, les Membres du Conseil, les Censeurs, et de tous ceux qui, par leurs dons, leur collaboration et leur sympathie constante, ont aidé la Société à accomplir sa tâche au cours de l'exercice 1948.

**Réunion du Conseil du 13 Avril 1949**

Présidence de Monsieur le Professeur H. C. EFFLATOUN Bey,  
*Vice-Président.*

*Nécrologie :*

Le Secrétaire Général annonce le décès du Docteur MOHAMED WALY, survenu le 4 Avril 1949. Le défunt appartenait à notre Société depuis 1926.

*Donation faite par la Société :*

Le Conseil décide le don à la Bibliothèque de l'INSTITUT FOUAD I<sup>er</sup> DU DÉSERT, d'une collection complète des Bulletins et des Mémoires de la Société, ainsi que l'envoi régulier de toutes ses publications à venir.

*Don à la Bibliothèque :*

Monsieur le Professeur Docteur H. PRIESNER fait don du travail de A. DA COSTA LIMA : Pulgas (bibliografia, catalogo e animais por elas sugados), publié dans le volume IV des Monographies de l'Institut Oswaldo Cruz de Rio de Janeiro en 1946.

Le Conseil remercie.

*II<sup>e</sup> Congrès Technique International :*

Notre Siège a été mis à la disposition du II<sup>e</sup> CONGRÈS TECHNIQUE INTERNATIONAL qui y a tenu ses travaux du 10 au 31 Mars 1949.

*Périodiques en Bibliothèque :*

Le Conseil décide l'impression d'une liste de toutes les revues, périodiques possédées par la Société, et sa distribution à tous ses Membres.



*Echange de Publications :*

Le Conseil approuve l'échange des publications de la Société contre les (1) ANNALES SCIENTIFIQUES DE FRANCHE-COMTÉ (Besançon) et (2) le BULLETIN DE LA SOCIÉTÉ DES SCIENCES NATURELLES DE TUNISIE.

*Admission de Membres :*

Sont admis à faire partie de la Société : Monsieur VAGN STEEN ANDERSEN, délégué en Egypte du Département de Protection des Plantes de la Farbenfabriken Bayer, présenté par Messieurs le Professeur Docteur H. PRIESNER et A. ALFIERI ; Monsieur le Docteur B. FLASCHENTRAEGER, professeur de Chimie Biologique à la Faculté des Sciences (Université Farouk I<sup>er</sup>), présenté par Messieurs le Docteur MAHMOUD HAFEZ et A. ALFIERI ; Monsieur EL-SAYED AMIN, démonstrateur au Département de Chimie de la Faculté des Sciences (Université Farouk I<sup>er</sup>), présenté par Messieurs le Professeur Docteur H. PRIESNER et A. ALFIERI ; Monsieur MAHMOUD AFIFI AFIFI, démonstrateur au Département d'Entomologie, Faculté des Sciences (Université Fouad I<sup>er</sup>), présenté par Messieurs le Docteur MAHMOUD HAFEZ et MOHAMED TEWFIK.

*Bureau du Conseil pour l'Exercice 1949 :*

Sont réélus : Messieurs le Professeur H.C. EFFLATOUN Bey et MOHAMED SOLIMAN EL-ZOHEIRY Bey, Vice-Présidents ; Monsieur ANASTASE ALFIERI, Secrétaire Général ; et Monsieur RICHARD WILKINSON, Trésorier.

*Comité Scientifique :*

Sont réélus : Messieurs le Professeur H.C. EFFLATOUN Bey, MOHAMED SOLIMAN EL-ZOHEIRY Bey, le Professeur Docteur HAMED SELEEM SOLIMAN Bey, le Professeur Docteur H. PRIESNER, le Professeur Docteur KAMEL MANSOUR, le Docteur SAADALLAH MOHAMED MADWAR Bey, et ANASTASE ALFIERI. Monsieur le Docteur MAHMOUD HAFEZ est élu en remplacement de Monsieur ABDEL-MEGUID EL-MISTIKAWY.

**Conférences**

Le MINISTÈRE DES AFFAIRES SOCIALES (DÉPARTEMENT DU FELLAH) a donné cinq conférences dans notre Siège, du 16 au 18 Avril 1949.

**Commémoration du Treizième Anniversaire  
de la mort du Roi Fouad I<sup>er</sup>  
(28 Avril 1949)**

Le Conseil de la Société a été présent, à la Mosquée Rifaï, à l'occasion de la Commémoration du Treizième Anniversaire de la mort du Très-regretté Roi Fouad. Il a déposé une couronne dans le mausolée royal, et, à l'issue de la cérémonie, s'est inscrit sur les registres du Palais d'Abdine.

## Conférences

L'ASSOCIATION EGYPTIENNE POUR L'AVANCEMENT DES SCIENCES a donné cinq conférences dans notre Siège, du 30 Avril au 5 Mai 1949.

### Anniversaire de l'Avènement au Trône de Sa Majesté le Roi FAROUK I<sup>er</sup> (6 Mai 1949)

A l'occasion de l'Avènement au Trône de Sa Majesté le Roi FAROUK I<sup>er</sup>, le Conseil d'Administration et les Membres de la Société ont adressé une dépêche à Son Excellence le Grand Chambellan, le priant de transmettre à l'Auguste Souverain leurs félicitations et leurs vœux les plus sincères.

### Séance Publique du 11 Mai 1949

Présidence de Monsieur le Professeur H.C. EFFLATOUN Bey,  
*Vice-Président.*

#### Communications :

Docteur H.G. AMSEL : On the Microlepidoptera collected by E.P. Wiltshire in Iraq and Iran in the years 1935 to 1938.

Docteur H.G. AMSEL : Die Microlepidoptera der Brandt'schen Iran-Ausbeute.

Monsieur J.E. COLLINS : Results of the Armstrong College Expedition to Siwa Oasis (Libyan desert), 1935 : Diptera Empididae, Dolichopodidae, Aschiza and Acalypterae.

Monsieur A. GABRIEL : Results of the Armstrong College Expedition to Siwa Oasis (Libyan desert), 1935 : Lepidoptera Rhopalocera.

Monsieur LEOPOLD MADER : Beitrag zur kenntnis der gattung *Pharoscymnus* Bedel (Coleoptera : Coccinellidae).

Monsieur N. OBRAZTSOV : *Amata (Syntomis) damarensis* Grünb. als selbständige Art (Lepidoptera : Syntomidae).

Professeur Docteur H. PRIESNER : *Curimosphena villosa* Haag, a sound producing beetle (Coleoptera : Tenebrionidae).

Professeur Docteur H. PRIESNER : Studies on the genus *Chirothrips* Hal. (Thysanoptera).

Professeur Docteur H. PRIESNER : Genera Thysanopterum (Keys for the identification of the genera of the order Thysanoptera).

Docteur B.P. UVAROV : Some Pamphaginae from Turkey (Orthoptera : Acrididae).

Monsieur EDUARD WAGNER : Zwei neue ostmediterrane Lygaeiden-Arten (Hemiptera : Heteroptera).

Monsieur E.P. WILTSHIRE : Middle East Lepidoptera, IX : New species and forms from Arabia and Persia, with a description of the genus *Tamsola* from Iraq.

Monsieur E.P. WILTSHIRE : The Lepidoptera of the Kingdom of Egypt, part II.

### Réunion du Comité Scientifique du 25 Mai 1949

Présidence de Monsieur le Professeur Docteur HAMED SELEEM SOLIMAN Bey.

Le Comité Scientifique approuve l'impression dans le Bulletin de la Société, volume XXXIII pour l'année 1949, des treize communications qui ont été lues à la Séance Publique du 11 Mai 1949.

### Réunion du Conseil du 25 Mai 1949

Présidence de Monsieur le Professeur H.C. EFFLATOUN Bey,  
*Vice-Président.*

#### *Donations :*

La Société a reçu les donations ci-après : L.Eg. 20 de la BANQUE MISR, et L.Eg. 15 de la SOCIÉTÉ FINANCIÈRE ET INDUSTRIELLE D'EGYPTE.

Le Conseil remercie.

#### *Achats pour la Bibliothèque :*

Le Conseil approuve l'acquisition des ouvrages ci-après : H.T. FERNALD and H.H. SHEPARD : Applied Entomology (1942) ; J. LEARY, W. FISHBEIN, L. CALTER : DDT and the Insect Problem (1946) ; T.H. ELLIOTT SNYDER : Our Enemy the Termite (1948) ; O. JAHANNSEN and F.H. BUTT : Embryology of Insects and Myriapods (1941) ; H.H. ROSS : A Text-Book of Entomology (1948) ; L.M. PEAIRS : Insect pests of farm, garden and orchard (1948) ; et Zoological Record (pars Insecta), volumes LXX-LXXXIV (1933-1947).

#### *Admission d'un Membre :*

Monsieur GEOFFREY S. HOARE, présenté par Messieurs E.P. WILTSHIRE et A. ALFIERI, est admis à faire partie de la Société.

#### *II<sup>e</sup> Congrès International de la Protection des Cultures :*

Le Conseil décide l'adhésion de la Société à ce Congrès qui se tiendra à Londres du 20 au 29 Juillet 1949.

**Réunion du Conseil du 7 Décembre 1949**

Présidence de Monsieur le Professeur H.C. EFFLATOUN Bey,  
*Vice-Président.*

*Nécrologie :*

Le Secrétaire-Général fait part du décès du Professeur FILIPPO SILVESTRI, membre honoraire de notre Société depuis 1940, survenu à Bevagna (Perrugia, Italie), sa ville natale, le premier Juillet 1949. Le défunt était Directeur de l'Institut d'Entomologie de l'Université de Naples et du Laboratoire d'Entomologie Agricole et Station Entomologique de Portici. Par ses remarquables travaux sur l'entomologie systématique et appliquée, SILVESTRI a apporté à la Science une contribution considérable.

Est également annoncée la mort de Monsieur A. HUSTACHE, membre correspondant de notre Société depuis 1923, qui s'occupait spécialement de l'étude des coléoptères Curculionides.

*IX<sup>e</sup> Congrès International d'Entomologie :*

Ce Congrès se tiendra à Amsterdam, du 17 au 24 Août 1951. Les entomologistes qui désireraient recevoir le programme provisoire et le bulletin d'adhésion sont priés de s'adresser au Secrétariat du Congrès, c/o Laboratoire de Physiologie, 136, Rapenburgerstraat, Amsterdam. Des informations complémentaires pourront être obtenues dans le courant de l'année 1950.

*Dons à la Bibliothèque :*

Monsieur PAUL LECHEVALIER, de Paris, nous a adressé le volume XXIV (1949) de l'Encyclopédie Entomologique, entièrement dédié au travail du feu J.-M. MIMEUR : Contribution à l'étude des zoocécidies du Maroc. Un certain nombre de cécidies marocaines se retrouvent en Egypte, d'où l'intérêt tout particulier que ce travail présente pour nous.

Le Professeur R. JEANNEL, de Paris, fait don de son étude sur « Les Psélaphides de l'Afrique Orientale (*Mémoires du Museum National d'Histoire Naturelle*, nouvelle série, XXIX, fascicule 1, Paris, 1949).

Le Conseil remercie.

*Donations :*

La SOCIÉTÉ ROYALE D'AGRICULTURE nous a fait parvenir sa contribution annuelle de L.Eg. 50.

Le Conseil remercie.

*Subvention :*

La Société a reçu L.Eg. 1000, représentant la subvention du Ministère de l'Agriculture pour l'année en cours.

Le Conseil remercie.

*Echange de Publications :*

L'échange des publications de la Société est établi avec les Institutions ci-après : (1) STATION DE BIOLOGIE MARINE, Ghardaqa (Mer Rouge), (2) ZOOLOGICAL SOCIETY OF BENGAL (Proceedings), Calcutta.

*Admission de Membres :*

Sont admis à faire partie de la Société : Monsieur le Docteur LOUIS KEIMER, présenté par Messieurs le Professeur H.C. EFFLATOUN Bey et A. ALFIERI; Monsieur W.J. STOWER, du Desert Locust Survey, Asmara (Erythrée), présenté par Messieurs MOHAMED SOLIMAN EL-ZOHEIRY Bey et A.R. WATERSTON; Monsieur A.R. ZAHAR, Chef de la Section de la Lutte contre les Mouches, Ministère de la Santé, présenté par Messieurs le Docteur SAADALLAH MOHAMED MADWAR Bey et A. ALFIERI; Monsieur ALY IBRAHIM BADAWI, démonstrateur au Département d'Entomologie de l'Institut Supérieur d'Agriculture de Chebin El-Kom, présenté par Messieurs ABDALLAH HABIB et A. ALFIERI; et Monsieur le Docteur ABD EL-FATTAH KHALIFA, conférencier au Département d'Entomologie de l'Institut Supérieur d'Agriculture de Chebin El-Kom, présenté par Messieurs MOHAWED TEWFIK et A. ALFIERI.

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## Some *Pamphaginae* from Turkey

[ Orthoptera : Acrididae ]

by B.P. UVAROV, D.Sc.

**Genus NOCARODES Fischer Waldheim, 1846.**

Although the limits of this genus became somewhat better defined after the removal of some species to *Paranocarodes* I. Bolivar, 1916 (*Gen. Insect.*, 170 : 22) and of others to *Nocaracris* Uvarov, 1928 (*Rev. russe Ent.*, 22 : 149), the remaining species do not all appear to be congeneric, and further subdivision may be required. This would, however, require a thorough critical revision of the known species, as well as a study of the numerous undescribed ones. I therefore, merely take an opportunity to describe three new species collected by my old friend Dr. Malcolm Burr and by Mr. Peter Davis in Turkey.

### ***Nocarodes burri* spec. nov.**

Very similar and, probably, closely allied to *N. bodenheimeri* Uvarov, 1940, but somewhat larger, with more prominent fastigium of vertex and more raised median pronotal carina, which has a distinct sulcus in its anterior fourth in both sexes, but in the rest is very finely sulcate; antennae distinctly longer; colour of hind legs different.

♂ (type). — Antenna 12-jointed, somewhat shorter than head and pronotum.

Frontal ridge sulcate throughout; viewed in profile, scarcely depressed at the level of the ocellum. Fastigium of vertex as in *N. bodenheimeri*, but its surface much more weakly granulose; median carina thick, wavy, with a distinct sulcus.

Pronotum as in *N. bodenheimeri*, but shiny and with obsolescent granules. Median carina more raised. Lateral carinae in prozona straight and parallel, in metazona weakly convex, convergent behind. Lateral lobes shiny, with obsolescent rugosities.

Anterior margin of prosternum laminate with an acute tongue-shaped median projection, flanked by two small notches.

Mesonotum, metanotum and the first abdominal tergite rugulose dorsally. Median carina distinct, smooth, finely sulcate only on the mesonotum. Lateral carinae low, smooth, visible only on the metanotum and the first two tergites. Tympanum absent. Genital segments as in *N. bodenheimeri*.

Hind femur relatively longer than in *N. bodenheimeri*. Hind tibia with 9 inner and 10 outer spines.

General coloration dirty ochraceous-brown with blackish and brown pattern. Face yellowish below the level of antennae. Lateral pronotal lobe edged all round with creamy colour; its metazona shiny brownish-black in the upper posterior corner. Abdominal tergites, from the second backwards, black laterally and light-ochreous above, with narrowly black bases; underside light yellow with black rings. Hind femur inside, including the lower inner sulcus, black, but the carina separating that sulcus from the inner face is reddish near the base while its base is yellow; inner knee-lobe black basally gradually turning to red in the apical half. Hind tibia bright red except on the outer side which is of a paler and somewhat yellowish shade; inner spines red, with black apices; outer spines pale yellow, with brown apices. Hind tarsus red above.

♀ (paratype). — Antenna consists mostly of strongly elongated segments. General coloration ochraceous, with brown and blackish markings. Hind femur on the inside black, with the whole lower inner carina blackish-red; inner knee-lobe bright-red in more than the apical half. Hind tibia on the inside red, on the outside yellow. Hind tarsus light-red above, brown below.

Length of body ♂ 21, ♀ 39; pronotum ♂ 5, ♀ 9; hind femur ♂ 8.5, ♀ 13.5 mm.

Described from 2 ♂♂ (including the type), 9 ♀♀, taken by Dr. M. Burr on Mt. Uludagh (Bythinian Olympus), 1700-2000 m., 26-30.viii.1943; 9 ♂♂, 5 ♀♀, taken on the same mountain, 1600-2000 m. in 1944 by Prof. Kosswig; and 1 ♀, also from Uludagh, 1800 m., 14.ix.1947, found in *Juniperetum nanae* by Dr. P.H. Davis. The conditions under which the typical series was collected have been described by Dr. Burr (1944, *Ent. Rec.*, 46: 100). Some of Brunner's (1882, *Prodr. europ. Orth.*, 191) records of *N. cyanipes* from Asia Minor probably refer to this species.

The series is very uniform, except that the last named female which Mr. Davis brought to London by air alive, is of slaty-grey general colour but otherwise quite typical.

The species is named after my friend Dr. Malcolm Burr, a veteran orthopterologist of inexhaustible energy whose recent explorations in Turkey are throwing fresh light on its fauna.

*N. burri* is allied to *N. bodenheimeri* Uvarov (1940, *Ann. Mag. nat. Hist.*, ser. 11, 6: 524) of Elma Dag in Central Turkey, east of Ankara, but differs by the structural and colour characters as indicated above. Another Turkish species, *N. tölgi* Ebner (1919, *Arch. Naturgesch.*, A, 8: 173) is of considerably larger size and differs in the coloration of hind legs, especially the tibiae. Another closely allied species, *N. bulgaricus* Drenovski (1930, *Mitt. bulgar. ent. Ges.*, 5: 17, figs. 3-4; 1936, *t.c.*, 9: 18, pl. I, figs. 1-4), found in the Alibotush Mts., Macedonia, at 900-1700 m., differs from *N. burri* by larger size, more compressed body, short-segmented antennae, and the inner knee-lobe of hind femur not red.

It would appear that there is a number of closely allied species, with an « island » type of distribution, occurring on isolated mountains; they may constitute a species-group, or even be regarded as geographical subspecies of one species.

#### ***Nicarodes citripes* spec. nov.**

Smaller, more compressed laterally than *N. burri*, with the body surface matt, granulose; bright yellow hind tibiae and red tarsi make the species easily recognisable.

♂ (type). — Antenna is incomplete. Frontal ridge shallowly sulcate, suddenly narrowed at the fastigium where the sulcus becomes quite fine; viewed in profile, the ridge is not depressed at the ocellum. Fastigium of vertex sloping, much longer than wide, apex acute, surface weakly concave; median carina thick, not sulcate, beginning in the middle and continuing on the occiput; lateral carinae strongly raised, thick.

Pronotum distinctly laterally compressed, matt, densely granulose, with scattered larger granules. Median carina tectiform, granulate, sulcate throughout. Lateral carinae represented by a series of granules, parallel in prozona, in the metazona hardly perceptible. Lateral lobes rugulose except under the lateral carinae where the surface is smoother and of velvety appearance.

Anterior margin of prosternum laminate, crenulate, with an acute conical projection in the middle.

Mesonotum, metanotum and abdomen above matt, rugulose, with scattered granules. Median carina well raised throughout, granulose, finely sulcate on the mesonotum and metanotum. Lateral carinae indicated by series of larger granules. Tympanum absent.

Hind femur relatively narrow; upper carina almost straight, finely serrate; lower carina scarcely expanded, its lower edge slightly crenulate.

General coloration blackish-brown above, with the larger granules yellowish. Abdomen in the apical half with a broad ochreous dorsal stripe.

Lower part of the face, edges of pronotal lobes and posterior edges of pronotum, mesonotum and metanotum and all femora ochreous; hind knees with semilunar black marks; inside of hind femur mahogany red. Hind tibia citron yellow, its apex and tips of the spines blood-red; hind tarsus bright red above. Underside light yellow; each abdominal sternite anteriorly with a pair of large black spots.

♀ (paratype). — General coloration greyish ochraceous, with dense light granules.

Length of body ♂ 16, ♀ 35; pronotum ♂ 4.5, ♀ 6.5; hind femur ♂ 7.5, ♀ 14 mm.

Described from 2 ♂♂ and 2 ♀♀ taken on Sandras Dag, S.W. Turkey, 2000 meters, 22.vii.1947, by Dr. M. Burr.

***Nocarodes bicoloripes* spec. nov.**

Similar to *N. citripes*, but very different (in the female sex) by broad fastigium with obsolete carinae, by very densely granulose surface, and by the coloration of hind tibia which is indigo-blue on the inside.

♀ (type). — Antenna 12-jointed, about as long as head and pronotum.

Frontal ridge with a narrow sulcus and thick margins above the ocellum, below it practically flat, with obsolescent margins; viewed in profile, not depressed at the ocellum. Fastigium of vertex very broad, sloping, margins hardly raised, apical angle obtuse, surface weakly concave, granulose; median carina very low, with a very fine sulcus.

Pronotum moderately compressed laterally, rounded in section, very densely rugulose and granulose.

Median carina low, smooth with fine sulcus. Lateral carinae obsolete.

Anterior margin of prosternum laminate, with a broad median tongue-shaped projection, flanked by broad excisions. Mesonotum, metanotum and abdominal tergites densely granulose, with incomplete lateral carinae; median carina distinct, not sulcate. Tympanum absent.

Hind femur moderately broad; upper carina practically straight, finely serrate; lower carina somewhat expanded behind the middle.

Coloration ash-grey. Hind femur inside black, below mahogany-red; knee outside and inside with a black semilunar spot. Hind tibia inside deep indigo-blue, outside grey; spines with reddish-black tips. Hind tarsus red on the inside.

Length of body 34; pronotum 7.5; hind femur 12 mm.

S.W. Turkey: Denizli vilayet, Boz Dag, 2250 meters, 16.vii.1947, 4 ♀♀ (P.H. Davis).



**Genus PARANOCARODES I. Bolivar, 1916.**

The genus was based on *Pamphagus straubei* Fieber and its diagnosis (*Gen. Insect.*, 170, p. 22) requires a correction as regards the structure of the abdominal tympanum, which was described as "parvo vel nullo", whereas actually the tympanum is large and open in the genotype and in other species referable to the genus on other grounds. It should be mentioned that I. Bolivar's treatment of tympanal structure was not consistent, since in a key to Palaearctic genera of Pamphaginae published in 1912 (*Trab. Mus. Cien. nat.*, Madrid, No. 6: 8) he included *Nocarodes* in a group with an open tympanum, but in the diagnosis of that genus in 1916 (*l.c.*, p. 24) he described the tympanum as absent or small. In fact, the genotype of *Nocarodes* Fischer Waldheim (*N. serricollis* F.W.; see Uvarov, 1928, *Rev. russe Ent.*, 22: 150) has no tympanum, but the tympanum is more or less developed in some other species, at present referred to *Nocarodes*. It remains to be seen whether the degree of development of the tympanum has a generic value, but in any case, this character should not be used in a misleading manner.

Another inaccuracy in I. Bolivar's diagnosis of *Paranocarodes* concerns the number of antennal segments, which is given as 12-14 in the key to genera and as 11-12 in the generic diagnosis on the same page; as some segments are imperfectly defined, the difference is not significant, and their exact numbers cannot be regarded as a generic character.

As in the case of *Nocarodes*, much revisional and descriptive work remains to be done on *Paranocarodes*. At present, I intend merely to deal with two species, *P. straubei*, which is the genotype, and a new one.

***Paranocarodes straubei* (Fieber 1853).**

1853. *Pamphagus straubei* Fieber, *Lotos*, 3: 127.

1882. *Nocarodes straubei* Brunner, *Prodr. eur. Orth.*, 189, fig. 45.

1916. *Paranocarodes straubei* I. Bolivar, *Gen. Ins.*, 170: 23.

A correct interpretation of this species, which is the genotype of *Paranocarodes*, proved to be a complicated procedure. Fieber's original description was based on a mixed material, partly from "Türkei (Straube)", partly from Cyprus. No *Nocarodes*, or *Paranocarodes* has been re-discovered in Cyprus since that obscure reference and it appears justified and wise to regard Turkey as the *terra typica* of *straubei*. Straube after whom Fieber has named the species, was an insect dealer in Dresden in 1851-54 (Horn & Kahle, 1936, *Ent. Beihefte*, 3: 270) and the specimen probably came to him through a casual collector. The conception of Turkey at that time was very wide, but it appears more probable that the specimen was taken either in European Turkey, or not far inland on the Asiatic side

of the straits, as the interior was not easily accessible at that time. It is also very probable that Brunner (*l.c.*) had before him either the type or specimens from the typical series and he recorded the species from Bosphorus and from the northern part of Asia Minor. Dr. Burr has made repeated efforts to re-discover the species on both sides of the Bosphorus, but have had no success until April 1947, when two adult males and some female nymphs were found in the Belgrade Forest near Istanbul. He has also discovered a pair of *Paranocarodes* in the museum of the Robert College, Istanbul, collected in the same locality and the Dean of the College has very kindly presented them to the British Museum. Both sexes agree in every detail with Fieber's meagre original description, and with Brunner's more detailed re-description of *straubei*, and I feel justified in regarding the specimens as topotypical and in offering a re-description of the species on their basis as follows :

♂. — Body strongly laterally compressed; surface very finely rugulose. Antennae missing.

Fastigium of vertex long, very acutely produced, distinctly concave, with obsolete rugosities; lateral carinae sharp, wavy, median carina very distinct, irregular. Frontal ridge in profile strongly rounded-prominent above the ocellum, distinctly depressed just below it, and weakly convex in the lower portion; its surface deeply sulcate above the ocellum, almost flat in the lower portion, where its margins diverge towards the clypeus.

Pronotum strongly cristate; median carina weakly and regularly convex without a sulcus; lateral carinae weak and parallel in the anterior portion, very weak and oblique in the posterior; viewed from above, front angle of pronotum very acute, hind margin angularly produced in the middle. Lateral lobes with callous edges in front and behind; hind edge crenulate in its lower portion. Metanotum and all abdominal tergites with crest-like median carinae, acutely produced at their posterior ends. Metanotum and first tergite with obtuse lateral carinae. Tympanum large.

Prosternum with a fine acute tooth, flanked by small indentations.

Hind femur finely serrate above, larger serrations alternating with smaller ones. Hind tibia with 9 inner and 10 outer spines. Arolia small.

General coloration brownish-red. Callous edges of pronotal lobes sulphur-yellow. Sides of abdomen blackish-brown. Hind femur inside black, fading to dark reddish-brown apically; inner knee-lobe wholly red. Hind tibia red all over; spines black-tipped. Hind tarsus red.

♀. — Surface of body with not dense small callous granules. Posterior edge of pronotal lobe strongly crenate in the lower portion. Median pronotal carina briefly sulcate anteriorly. Coloration dirty reddish-brown; hind femur

not black inside (possible discoloured); hind tibia and its spines brownish-red.

Total length ♂ 26, ♀ 37 (abdomen contracted in both seres); pronotum ♂ 7, ♀ 11; hind femur ♂ 10, ♀ 14 mm.

Belgrade Forest near Istanbul, 24.vii.1918, 1 ♂ (C. Gates Jr.); 24.v.1920, 1 ♀ (V.S.); 7.iv.1947, 2 ♂♂, 4 ♀♀ nymphs (M. Burr).

There is also in the British Museum collection a badly discoloured female, labelled "*Acocera straubei* Fieb., Asia Minor", which has been received from Brunner. Dr. Burr also has collected at Uludagh (Bythinian Olympus) 1700-2000 m., 26-30.viii.1943, a male which is almost identical with the topotype redescribed above, except that the frontal ridge is less excised at the ocellum, and the hind femur inside is lighter in the upper part.

It can be taken as established that *P. straubei* occurs at both sides of the straits, from the lower ground up to 2000 m. in the Uludagh.

Werner's (1901, *Sitzber. k. Akad. Wiss. Wien., m.-nat. cl.*, Abt. 1, 110: 282) records of *Nocarodes straubei* from a number of localities in Asia Minor probably refer to several species.

#### ***Paranocarodes serratus* spec. nov.**

A species of a large size, similar to *P. schelknovnikovi* Uvarov, 1918, but body more compressed laterally and abdominal tergites strongly serrate, especially in the male.

♂ (type). — Antennae 13-jointed, relatively short, reaching a little beyond the middle of pronotum, distinctly dilated basally, joint 4 subquadrate, the following ones not, or scarcely, longer than broad, except the terminal which is elongate.

Fastigium of vertex long, acute, strongly concave, with minute granules; lateral carinae strongly raised, acute; median carina weak but distinct. Frontal ridge in profile moderately rounded-prominent above ocellum, weakly depressed just below it and practically straight in the lower portion; its surface deeply sulcate throughout.

Pronotum strongly cristate; median carina scarcely sulcate, practically straight in the posterior half, but strongly sloping forwards, so that the profile appears almost obtusangulate; lateral carinae very weak and irregular; viewed from above, front angle of pronotum very acute, hind margin angularly produced in the middle. Lateral lobes with callous tubercles along anterior margin; such tubercles are longer and more numerous along the posterior edge which appears irregularly serrate. Mesonotum, metanotum and all abdominal tergites with crest-like carinae, produced into spines poste-

riorly, edges of tergal spines minutely denticulate. Metanotum and first tergite with distinct, though irregular, lateral carinae. Tympanum large.

Prosternum with a very acute spine-like tooth.

Hind femur with very distinct serrations of alternating size. Hind tibia with 9 inner and 10 outer spines. Arolia small.

General coloration brownish-black, with dense whitish callous granules. Edges of pronotal lobes interruptedly whitish. Abdomen above, from second tergite backwards, with a broad, dirty-ochraceous band. Hind femur, brownish-black all over. Hind tibia shiny black, including all spines, but the outer spines dirty-brown in their middle portions.

♀ (paratype). — Body densely granulate. Posterior edge of pronotal lobe crenate throughout, more distinctly so in the lower portion. Median pronotal carina in profile less distinctly obtusangulate than in the male; it is very briefly sulcate anteriorly. Edges of tergal spines distinctly denticulate. Coloration dirty ochraceous; hind femur inside somewhat blackened in the lower portion and along the lower edge; hind tibia bluish-black inside; spines dirty-yellow, black-tipped.

Total length ♂ 25, ♀ 60; pronotum ♂ 8, ♀ 16; hind femur ♂ 11.5, ♀ 20mm.

Gallipoli, 1-10.viii.1923, 1 ♂, 1 ♀ (W.M.J. Martin).

#### Genus ORCHAMUS Stael.

The latest list by I. Bolivar (1916, *Gen. Ins.*, 170: 33) comprised five species, but *O. syriacus* Brisout belongs to *Prionosthenus* I. Bolivar (Uvarov, 1942, *Trans. Amer. ent. Soc.*, 67: 349). The remaining four species are: *O. raulinii* Lucas, 1854, Crete (see Uvarov, 1942, *t.c.*: 347); *O. yersini* Brunner, 1882, Beirut (see Uvarov, *l.c.*); *O. zebraeus* Brunner, 1882, Syria; and *O. gracilis* Brunner, 1882, Cyprus. A fifth species *O. hebraeus* Uvarov 1942 (*t.c.*: 348), from Mt. Carmel, Palestine, has recently been added. Dr. Malcolm Burr and Mr. P.H. Davis have recently discovered a sixth member of this genus on the mainland of Asia Minor and it is described below as a new species, although further studies, on more abundant material, are required to establish whether this is not a subspecies of the Syrian *O. yersini*.

#### *Orchamus davis* spec. nov.

Of medium size for the genus; differing from *O. yersini* by more rugose integument, less elongate antennal joints, less raised pronotal carina, and the coloration of hind tibia.

♀ (type). — Antennae a little longer than head and pronotum, dis-

tinctly flattened and dilated basally, most of the joints in the basal portion are not, or but little, longer than broad.

Fastigium of vertex elongate-pentagonal, apex subacute, deeply cleft by the frontal sulcus; surface scarcely concave, transversely wrinkled; margins weakly raised, punctured; no median carina. Frontal ridge in profile parabolically produced forwards above the ocellum, straight below it, its surface sulcate throughout, though less deeply so in the lower portion.

Pronotum weakly rounded-prominent anteriorly, broadly roundly excised posteriorly. Median carina in profile moderately raised in prozona, the highest point being behind the middle; very low in metazona. Typical sulcus deep, others weak. Prosternum with a broad trapezoidal projection of the laminate anterior margin; the margin of the projection slightly concave; prosternal tubercle covered by several smaller round tubercles.

Elytra reaching the second tergite, narrow; their greatest width in the apical third; apex parabolic.

Upper carina of hind femur weakly serrate. Hind tibia with 10 spines on both sides. Tarsal arolia large.

General coloration grey (some parts of body brown due to post-mortem discolouration), with dirty-white callous rugosities and small shiny black tubercles. Inner side of hind femur grey, with blackish dots along carinae; inner knee-lobe black, with white posterior edge. Hind tibia on the inside pink, with a bluish tinge; spines bluish-black basally, whitish in the middle, black-tipped; hind tarsus pink on the inside.

♂ (paratype). — Much smaller than the female, with relatively longer antennae. Pronotal carina less raised. Coloration light greyish-buff, with numerous shiny black granules.

Total length ♂ 35, ♀ 67; pronotum ♂ 6, ♀ 11; hind femur ♂ 16, ♀ 23 mm.

S.W. Turkey : Denizli vilayet, ruins of Termessus near Antalya, 1000 meters, 12.viii.1947, 1 ♀ (type); between Antalya and Korkudeli, 16.viii.1947, 2 ♂♂ (P. H. Davis).





# *Curimosphena villosa* Haag, a sound producing beetle

[ Coleoptera : Tenebrionidae ]

(with 1 Text-Figure)

by Prof. Dr. H. PRIESNER

During my stay at Fayed, Suez Canal Zone, from 1942 to 1944, I had the opportunity to make observations on the life habits of various insects. My friend, Mr. F. Smoly, drew my attention one day to a certain faint sound that could be heard at evening hours, and was supposed to be emitted by an insect, though it was much less pronounced than that produced by the mole cricket or other, smaller insects of this group. It took us some time



*Curimosphena villosa* Haag,  $\times 3.5$ .

until we were able to discover the cause of this sound which could be heard from June onwards, as we did not anticipate that this sound could be produced by such a comparatively small insect, as is the Tenebrionid beetle *Curimosphena villosa*, measuring about 9 to 11 mm.

A number of beetles were collected and placed separately in small boxes. Observations were made on the 20th August, 1943, and on some of the following days. The results of these observations were as follows :

- (1) Only the males are sound producers.

(2) The sound is being produced in a peculiar way. Not as in other beetles, as, e.g., Carabidae, Cerambycidae or Lamellicornia, by the movement of certain parts of the body or its appendages against chitinous projections, but, as it appeared, by beating the whole posterior part of the body, i.e., especially the abdomen against the substratum, these movements being effected in quick succession. I gained the impression that during the vibration of the body the legs are not removed from the substratum. The fast vibrations of the abdomen produce a sound which may be compared with the buzzing of the spring of a small induction coil. The duration of the sound producing action is not more than a few seconds, but varies. The intervals last usually much longer than the vibrations; I could not observe any regularity in either.

(3) During day time no buzzing was heard, it was always during the hours after sunset, when activity of the beetle was at its height.

(4) The most striking observation about the sound producing activity of this beetle was the following: When I endeavoured to imitate the sound with the tongue, which was not difficult by trying to pronounce a soundless italian 'r', the beetle responded immediately, even at a distance of about half a metre. Every time I produced this buzzing sound myself, the beetles responded. The longer the interval between these trials, the more certain the response of the beetles. This response is rather surprising, and it can only be explained by the assumption that the sound produced by pronouncing the 'r' must be rather similar to that produced by the insects, so much so that the insects do not distinguish it from the sound produced by their congeners. In any case, it is to be assumed that these insects can perceive this sound, and that it has the same significance as in other insects where it serves to the attraction of the females.

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# Zwei neue ostmediterrane Lygaeiden-Arten

[ Hemiptera-Heteroptera ]

(mit 3 Textfiguren)

VON EDUARD WAGNER, Hamburg-Lgh. 1.

## 1. *Heterogaster longirostris* nov. spec.

Schlank, schwarz mit graubrauner Zeichnung, die schwarzen Teile metallisch glänzend. Oberseits dicht mit feinen, hellen Haaren bedeckt, die auf Kopf und Pronotum lang und aufrecht, auf den Halbdecken kurz und schräg nach hinten gerichtet sind. Diese Behaarung ist weit feiner und kürzer als bei *H. urticae* F.

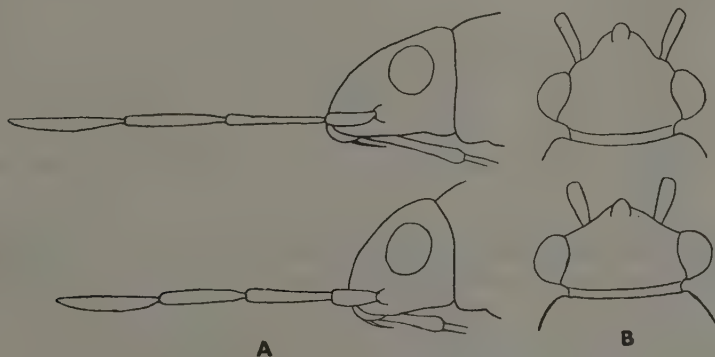


Fig. 1 : *Heterogaster*, Kopf und Fühler des Männchens (16 mal.) — Obere Reihe = *H. longirostris* nov. spec.; Untere Reihe = *H. urticae* F. — A = Kopf und Fühler von der Seite, B = Kopf von oben.

Kopf verhältnismässig lang und nur wenig geneigt (Fig. 1 A), beim ♂ 0,92, beim ♀ 0,89 mal so lang wie mit den Augen breit. Schwarz, dicht und fein punktiert. Stirnschwiele hell gelblich bis braun. Am Hinterrande des Scheitels oft ein kleiner gelber Fleck. Scheitel beim ♂ 3,1 mal, beim ♀ 2,7 mal so breit wie das kleine runde Auge (Fig. 1 B).

Fühler sehr lang, weit länger und schlanker als bei allen übrigen Arten der Gattung (Fig. 1 A). Glied 1 fast halb so lang wie der Scheitel breit ist. Glied 2 fast so lang wie der Scheitel breit ist. Glied 3 so lang wie das 2. und 0,86-0,88 mal so lang wie das 4. Glied 1 schwarz mit Ausnahme von Grund und Spitze, die übrigen Glieder hell gelblich und nur an der Spitze bräunlich, seltener zum grössten Teile bräunlich.

Pronotum schwarz, Vorder- und Seitenrand oft schmal gelblich. Hinterer Teil des Pronotum in der Regel mit 3 gelblichen Flecken, die ein Dreieck bilden. Die Seiten sind deutlich eingebuchtet, die Vorderecken sind deutlich gewinkelt, nicht abgerundet.

Schildchen schwarz, die Spitze schmal gelblich, die Punktierung ist nur an der Spitze und in der Mitte deutlich.

Halbdecken gelblichgrau, farblos punktiert. Spitze des Clavus und des Corium sowie einige Flecke auf der Fläche des letzteren dunkelbraun bis schwarz. Membran weisslich, in der Mitte oft mit 2 kleinen, braunen Flecken.

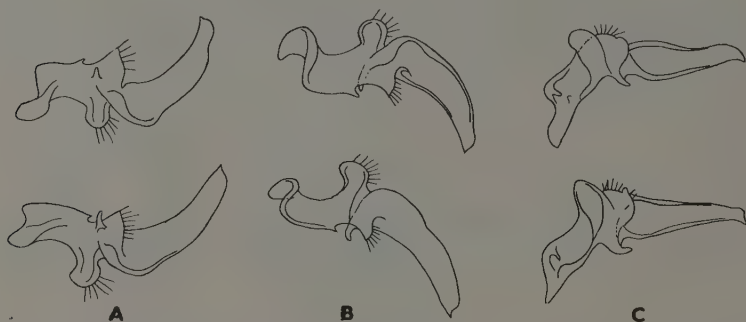


Fig. 2 : *Heterogaster*, Linker Genitalgriffel des Männchens (50 mal). — Obere Reihe = *H. longirostris* nov. spec.; Untere Reihe = *H. urticae* F. — A = von links, B = von rechts, C = von innen.

Unterseite schwarz, die Mitte der 3 letzten Hinterleibssegmente oft gelblich, beim ♂ auch das Genitalsegment. Schnabel ungewöhnlich lang, beim ♂ die Hinterhüften überragend, beim ♀ bis zwischen die Hinterhüften reichend. Das 1. Glied erreicht (♀) oder überragt (♂) den Hinterrand des Kopfes (Fig. 1 A). Glied 1-3 gelblich, die Spitze des 4. schwärzlich. Beine hell weisslichgelb, Hüften an der Aussenseite mit grossem schwarzem Fleck. Vorderschenkel schwarz mit Ausnahme des Grundes, der Spitze und einer schmalen Längsline an der Aussenkante, die sich kurz vor der Spitze zu einem runden Fleck erweitert. Innenseite mit 1 kräftigen Zahn. Mittel-



und Hinterschenkel nahe der Spitze mit 2 schwarzen Halbringen, die bei den Hinterschenkeln oft stärker ausgeprägt sind. Schienen an der Aussenkante mit 3 bräunlichen Flecken oder Halbringen. Spitze des 1. und 3. Tarsengliedes oft bräunlich.

Genitalsegment des ♂ am Hinterrande gleichmässig gerundet, nicht eingebuchtet. Genitalgriffel (Fig. 2) hakenförmig. Hypophysis kürzer und stärker gekrümmt (A+B), bei Betrachtung von innen (C) leicht geschweift. Sinneshöcker kurz und kräftig, der neben ihm sitzende Zahn ist kurz und sitzt verhältnismässig weit nach hinten. Basis breit und kräftig.

Länge : (♂) 5,3-5,7 mm., (♀) 6,6-7,2 mm. Grössenverhältnisse siehe Tabelle !

Tabelle der Grössenverhältnisse

|  |   | LÄNGE | BREITES DES   |        |                |       | LÄNGE VON FÜHLERGLIED |    |    |    |
|--|---|-------|---------------|--------|----------------|-------|-----------------------|----|----|----|
|  |   |       | PRO-<br>NOTUM | KOPFES | SCHEI-<br>TELS | AUGES | 1                     | 2  | 3  | 4  |
| <i>longirostris</i> nov. spec.                             | ♂ | 566   | 180           | 127    | 77             | 25    | 36                    | 74 | 74 | 84 |
|  | ♀ | 711   | 218           | 145    | 89             | 33    | 42                    | 80 | 79 | 90 |
| <i>urticae</i> F.  | ♂ | 593   | 188           | 135    | 83             | 26    | 31                    | 65 | 65 | 75 |
|  | ♀ | 646   | 209           | 139    | 89             | 25    | 33                    | 65 | 65 | 77 |
| Alle Masze in 1/100 mm., alle Messungen senkrecht von oben |   |       |               |        |                |       |                       |    |    |    |

*H. longirostris* nov. spec. ist in Gestalt und Grösse dem *H. urticae* F. ausserordentlich ähnlich, unterscheidet sich aber von dieser Art durch den ungewöhnlich langen Schnabel, der bei *H. urticae* kaum bis zu den Mittelhüften reicht und dessen 1. Glied nie den Hinterrand des Kopfes erreicht (Fig. 1 A). Auch die Fühler sind bei *H. urticae* weit kürzer und dicker (Fig. 1 A), das 2. Fühlerglied ist nur 0,78 mal so lang wie der Scheitel breit ist. Der Kopf ist viel kürzer und nur 0,70 (♀) bis 0,72 (♂) mal so lang wie mit den Augen breit. Ausserdem ist die Behaarung grober und Schenkel und Schienen sind anders gezeichnet. Die Punkte auf den Haldecken sind nicht farblos sondern braun, die Vorderecken des Pronotum deutlich gerundet. Das Genitalsegment des ♂ ist am Hinterrande deutlich eingebuchtet. Die Genitalgriffel (Fig. 2) sind länger und schlanker, ihre Hypophysis ist weniger stark gekrümmt (A+B) und bei Betrachtung von innen (C) gerade. Der Sinneshöcker ist länger und der neben ihm sitzende

Zahn steht weiter vor. Auch die Basis ist schlanker. Die Fig. 2 zeigt diese Unterschiede besser als Worte es können. Von *H. albidus* Kir. unterscheidet sich unsere neue Art durch den langen Schnabel, die langen, schlanken Fühler, die schwarze Unterseite und den Zahn an der Innenseite der Vorderchenkel, der bei *H. albidus* fehlt.

Ich untersuchte 7 ♂♂ und 1 ♀ von der Insel Cypern: Episcopi 28.4.37, H. Mavromoustakis leg.; Ayia napa 10.7.39 und Athalassa 6.6.39, H. Lindberg leg.

Type und Allotype in meiner Sammlung, Paratypen ebenda und in der Sammlung H. Lindberg, Helsingfors.

## 2. *Henestaris cypriacus* nov. spec.

Von kleinerer, etwas gedrungenerer Gestalt. Die Grundfarbe ist ein blasses Gelbbraun, das jedoch an vielen Stellen durch ein kräftiges, dunkleres Purpurrot überdeckt wird. Dadurch erscheint das ganze Tier rötlich. Die Punktierung der Oberseite ist grösstenteils farblos; nur an wenigen Stellen sind die Punkte schwarz; solche Stellen erscheinen daher als graue Flecke. Eine dritte Art von Flecken erscheint wie ein weisslicher, silberglänzender Belag. Hinzu kommt noch eine feine goldgelbe Behaarung. Das Tier bekommt durch alles dies ein recht buntes Aussehen, das es von allen übrigen Arten der Gattung leicht unterscheidet.

Kopf sehr kurz, dreieckig (Fig. 3 A), kaum schmaler als das Pronotum am Hinterrande breit ist. Augen lang gestielt, von oben gesehen genau seitwärts gerichtet (Fig. 3 A); von vorn gesehen ganz wenig aufwärts gerichtet (Fig. 3 C); gross, rotbraun, glänzend; der Raum zwischen ihnen 3,5 mal so breit wie ein Auge (bei *H. laticeps* 4 mal). Ocellen nahe dem Hinterrand des Scheitels inmitten eines dunklen Fleckes in einer kleinen Grube gelegen. Die letztere setzt sich als Rinne gegen die Fühlerwurzel fort.

Fühler rotbraun; Glied 1 schwarzbraun bis schwarz, am Grunde bisweilen rötlich, dicht und fein goldgelb behaart, halb so lang wie der Scheitel breit ist und stets fast doppelt so dick wie das 2. Glied (Fig. 3 A). Die beiden mittleren Glieder schlank, dunkelbraun bis rotbraun mit schwarzer Spitze; das 3. Glied etwa 0,7 mal so lang wie das 2. und etwas länger als das 1. Das 4. Glied dick, spindelförmig, rotbraun, etwas kürzer als das 3. und halb so lang wie der Scheitel zwischen den Augen breit ist.

Pronotum deutlich trapezförmig (Fig. 3 A), sein Hinterrand etwa 1,65 mal so breit wie der Vorderrand und etwa 1/15 breiter als der Kopf samt Augen. Die sonst farblose Punktierung ist schwarz an den Vorderecken, auf den Schwielen, in der Mitte hinter den Schwielen und bisweilen auch an den Hinterecken. Der hintere Teil des Pronotum ist jedoch stets heller

als der vordere. Schildchen mit zwei hellen, glatten Flecken in den Grundwinkeln, schwacher heller Mittellinie und heller Spitze, sonst dicht schwarz punktiert.

Halbdecken grösstenteils farblos punktiert. Clavus und Corium an der Clavusnaht mit dunklen Punktreihen. Corium am hinteren Ende mit dunklem Fleck, der nur nach innen scharf begrenzt ist. Membran milchweiss, Adern weiss.

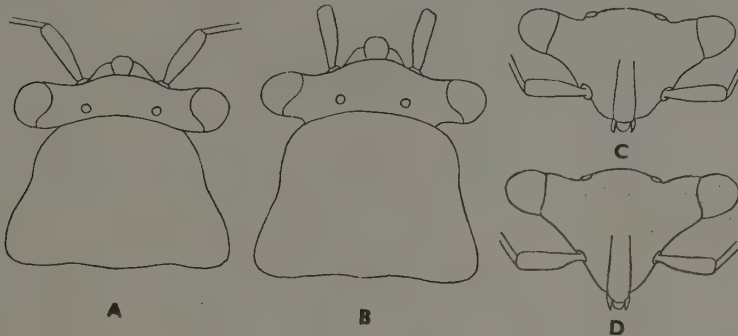


Fig. 3 : *Henestaris*, Kopf des Weibchens (13 mal). — A + C = *H. cypriacus* nov. spec., B + D = *H. laticeps* Curt. — A + B = von oben, C + D = von vorn.

Unterseite rotbraun, dicht hell behaart und zum grössten Teile schwarz punktiert. Beine rotbraun, dicht hell behaart. Schenkel schwarz gefleckt. Schienen heller, braun punktiert. 3. Tarsenglied dunkel, Klauen schwarz. Der Schnabel reicht bis zu den Mittelhöften.

Länge : (♀) 4,6-5,3 mm, Grössenverhältnisse siehe-Tabelle !

Tabelle der Grössenverhältnisse

|  | LÄNGE | BREITE DES    |        |                |       | LÄNGE VON FÜHLERGLIED |    |    |    |
|--|-------|---------------|--------|----------------|-------|-----------------------|----|----|----|
|  |       | PRO-<br>NOTUM | KOPFES | SCHEI-<br>TELS | AUGES | 1                     | 2  | 3  | 4  |
| <i>cypriacus</i> nov. spec. ♀                              | 487   | 100           | 155    | 101            | 28,5  | 48                    | 71 | 52 | 50 |
| <i>laticeps</i> Cust. ♀                                    | 536   | 167           | 167    | 111            | 28    | 49                    | 73 | 56 | 64 |
| Alle Masse in 1/100 mm., alle Messungen senkrecht von oben |       |               |        |                |       |                       |    |    |    |

*H. cypriacus* nov. spec. gehört zu den Arten, bei denen die Augen langgestielt und von den Vorderwinkeln des Pronotum entfernt sind (*H. curtulus*

Horv. und *H. laticeps* Curt.). Er steht unter diesen *H. curtulus* Horv. am nächsten, unterscheidet sich aber von ihm durch grössere, breitere Gestalt, die auffallende rötliche Färbung, breiteres Pronotum, die grösstenteils farblose Punktierung der Oberseite, die ungefleckte Membran, und die hellen Schwielen des Pronotum. Von *H. laticeps* Curt. unterscheidet sich die neue Art durch klemere Gestalt, die leicht aufwärts gerichteten Augen, die deutlich grösser sind, kürzere Fühler (vor allem ist das 4. Glied viel kürzer), kürzeres Pronotum, das nach vorn stärker verengt ist, kürzeren Kopf, schmalere Scheitel und die auffallende rote Färbung.

Ich untersuchte 4 ♀♀ aus Cypern, Akrotiri Bag. 11.8.38, H. Mavroustakis leg. Belegstücke in meiner Sammlung und in der Sammlung H.H. Weber in Ellerdorf.

Für freundliche Unterstützung bei dieser Arbeit bin ich Herrn Dr. H. Lindberg in Helsingfors und Herrn H.H. Weber zu grossem Dank verpflichtet.

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# Beitrag zur Kenntnis der Gattung *Pharoscymnus* Bedel

[Coleoptera : Coccinellidae]

VON LEOPOLD MADER (Wien)

## 1. *Pharoscymnus nubicus* nov. spec.

Gehört nach den Gattungsmerkmalen in die Gattung *Pharoscymnus* Bed. und besitzt auch die in dieser Gattung übliche Gestalt und Proportionen. Fast kreisrund, ziemlich gewölbt, zart und anliegend greis behaart. Oberseite äusserst fein retikuliert, zart punktiert. Oben ockergell, das mittlere Drittel des Halsschildes und die Scheibe jeder einzelnen Decke angebräunt, so dass man die Farbe der Oberseite auch als mehr oder weniger bräunlich, mit breiten ockergelben Seiten des Halsschildes und mehr oder minder aus gebildeten Naht-, Basal- und Seitensaum der Flügeldecken annehmen kann. Mitunter scheinen die helleren Säume der Flügeldecken wenig auf (verfettete Stücke?), so dass es einer genaueren Prüfung zu deren Erkennung bedarf. Die äusserste Randkante der Flügeldecken ist geschwärzt. Unterseite mit den Epipleuren der Flügeldecken und den Beinen ockergelb, Hinterbrust und Bauch mehr oder weniger gebräunt. Länge 2.5-2.7 mm. — Egypt, Gebel Elba, 5.ii.1933 (Wadi Aideb). Von Prof. Dr. H. Priesner auf *Acacia ehrenbergiana* gefangen. — Cotypen in der Sammlung des kgl. ägyptischen Ackerbau-Ministeriums und in meiner eigenen.

Gebel Elba liegt zwar schon südlich des Nördlichen Wendekreises, im nördlichen Nubien, gehört aber nach der Regionen-Einteilung von Wallace und Dr. Holdhaus noch der paläarktischen Region an. Zur Abgrenzung der Neuen Art diene die hier folgende Tabelle :

## 2. Tabelle der paläarktischen *Pharoscymnus*-Arten

Diese Tabelle ist nach leicht kontrollierbaren Merkmalen aufgestellt, um überhaupt einmal eine Tabelle zu geben und das zeitraubende Herumsuchen in allen möglichen Zeitschriften zu ersparen. Eine kritische Tabelle



bleibt der Zukunft überlassen, da die vorliegenden Beschreibungen leider oft in entscheidenden Momenten keinen Aufschluss über wichtigere Merkmale geben.

- 1 (4) Flügeldecken schwarz, einfarbig
- 2 (3) Sehr kleine Art, kaum 1 mm, weniger tief schwarz und mit längerer, steif aufgerichteter Behaarung. Ansonsten dem *Stethorus punctillum* Ws. sehr ähnlich. — Syrien..... **berytensis** Ws.
- 3 (2) Grössere Art, 1.5-2 mm, mit geneigter Behaarung. — Aegypten..... **eichleri** Mad.
- 4 (1) Flügeldecken nicht schwarz, heller oder gezeichnet, wenigstens mit mehr oder weniger aufscheinenden helleren Säumen.
- 5 (6) Flügeldecken bräunlich, jede Decke mit mehr oder minder aufscheinendem ockergelbem Saum, äusserste Randkante geschwärzt. Halsschild ockergelb, mittleres Drittel angebräunt. 2.5-2.7 mm. — Südliches Aegypten..... **nubicus** Mad.
- 6 (5) Flügeldecken einfarbig hell oder höchstens die äusserste Seiten oder Nahtkante angedunkelt oder Flügeldecken sind gemakelt.
- 7(12) Flügeldecken nicht gemakelt.
- 8 (9) Oberseite mit dem Halsschild gänzlich ziegelrot. 1.5 mm. — Algier, Tunis..... **ovoideus ab. deserti** Sic.
- 9 (8) Halsschild grösstenteils dunkel, nur die äusserste Naht- und Seitenrandkante der Flügeldecken angedunkelt.
- 10(11) Behaarung zart und kurz. 2 mm. — Algier.... **anchorago** Frm. (ab.)
- 11(10) Behaarung verhältnismässig lang. ca. 2 mm. — Sinai..... **priesneri** Mad.
- 12 (7) Flügeldecken mit deutlicher Makelung.
- 13(14) Spanien. — Flügeldecken pechschwarz, auf der Scheibe ausgedehnt gelb und hinter der Mitte kurz pechbraun gefleckt. 1.2 mm..... **brevemaculatus** Pic
- 14(13) Nicht von Spanien und anders gezeichnet.
- 15(24) Flügeldecken auf hellem Grunde dunkel gezeichnet.
- 16(21) Auf den Flügeldecken an den Seiten auch vorne kein dunklerer Saum.
- 17(18) Flügeldecken rot, mit dunkler, gemeinsamer, ankerförmiger Zeichnung auf der Naht. 2 mm. — Algier ..... **anchorago** Fairm.
- 18(17) Flügeldecken ohne ankerförmige Zeichnung.
- 19(20) Flügeldecken hell gelblichbraun, mit je drei braunen Flecken, der 1. dreieckig, an der Basis, mit der Spitze zur Naht, der 2. eine schräge, dreieckige Binde, mit der Basis aussen im hinteren Teile der Scheibe, der 3. rhombisch, auf der Naht hinter der Mitte. 1.5 mm. — Algier, Tunis ..... **ovoideus** Sic.
- 20(19) Flügeldecken gelblich, mit einigen unregelmässigen braunen Flecken

- als Ueberreste der einstigen schwarzen Grundfarbe. 2 mm. — Aegypten  
 ..... **isidis** **ab. brunneonotatus** **Pic**
- 21(16) Flügeldecken, nebst anderem, wenigstens auch vorne an den Seiten  
 mit dunklerem Saum.
- 22(23) Griechenland. — Die einstige schwarze Grundfarbe ist auf einen schma-  
 len Nahtsaum, einen etwas breiteren Streifen an der Basis und  
 einen breiten Seitensaum zurückgedrängt. 1.8 mm. ....  
 ..... **fleischeri** **ab. discopterus** **Ws.**
- 23(22) Wüste Gobi. — Braune Zeichnung: Ein grosser, dreieckiger Basal-  
 fleck, der die ganze Basis einnimmt und mit seiner Spitze etwas  
 über  $\frac{1}{3}$  der Nahtlänge nach hinten reicht, ein breiterer Aussensaum,  
 der nach hinten zu blasser wird, eine quere gemeinsame Makel in  
 $\frac{2}{3}$  der Nahtlänge und 2 mehr oder minder zusammenhängende  
 Scheibenflecken. 1.2 mm. .... **brunneosignatus** **nov. spec.**  
 (Beschreibung dieser Art am Ende der Tabelle).
- 24(15) Flügeldecken auf dunklem Grunde mit heller Zeichnung, die aus  
 freien oder verflochtenen Makeln besteht.
- 25(26) Arabien. — Aus der Verfließung von drei gelben Makeln bildet sich  
 eine Zeichnung, die auf der rechten Decke ein C bildet, ausserdem  
 der Seitenrand gelb. 1.5 mm. .... **c-luteum** **Sic.**
- 26(25) Nicht aus Arabien. — Zeichnung anders. Decken entweder mit grosser  
 Diskalmakel oder mit 2-5 hellen Flecken, die frei stehen oder auch  
 mehr oder minder verfliessen, oft ist auch der Seitenrand aufgehell.  
 (Charakteristisch für viele Arten dieser Gattung sind (vorbehaltlich  
 der sonstigen Variabilität) besonders 3 helle Flecke: einer in  $\frac{1}{4}$   
 der Länge, dicht hinter der Schulterbeule, einer in der Mitte nahe  
 der Naht, einer in  $\frac{3}{4}$  der Länge genau hinter dem ersten. Bei voller  
 Zeichnung kommen noch zwei Flecke dazu, so dass sich dann die  
 Stellung der 5 Flecke mit 2,2,1 angeben lässt. Bei manchen Arten  
 ist der erste Fleck mehr oder minder mondförmig, oder auch wellen-  
 förmig. Häufig verfliessen die Flecke, aber es lässt sich meistens ihre  
 Zusammensetzung noch verfolgen.
- 27(36) Flügeldecken mit je 5 oder 4 Makeln.
- 28(33) Flügeldecken mit 5 Makeln.
- 29(30) Von Madeira und den Canaren. — Behaarung aufgerichtet. 2.2 mm.  
 ..... **decemplagiatus** **Woll.**
- 30(29) Von Nordafrika. — Behaarung anliegend, wenn auch manchmal rauh.
- 31(32) Makeln der Decken grösser, hell bräunlichgelb oder gelb, oft mehr  
 oder weniger verflochten. Punktierung des Halsschildes etwas feiner  
 als die der Flügeldecken. 2 mm. — Aegypten .....  
 ..... **isidis** **ab. varius** **Kirsch et div. abb.**

- 32(31) Makeln der Decken klein, rundlich, rot, mitunter auch verflossen  
Punktierung des Halsschildes gröber als die der Decken. 1.5-2 mm.  
— Algier, Sizilien ..... **setulosus ab. bardus Muls. et God.**
- 33(28) Flügeldecken mit je 4 Makeln.
- 34(35) Behaarung zart und kurz. 2 mm. — Algier .. **anchorago Fairm. (ab.)**
- 35(34) Behaarung rauher und länger, 1.5-2 mm. — Algier, Sizilien .....  
..... **setulosus Chev. und ab. quadrimaculatus Pic**
- 36(27) Flügeldecken mit weniger Makeln.
- 37(48) Flügeldecken mit je 3 Makeln, wie sub 26 angegeben. Häufig sind die  
Verfliessungen 1+2, seltener 1+3, selten 1+2+3+1.
- 38(45) Arten aus dem Mittelmeergebiet.
- 39(40) Halsschild viel schmaler als die Flügeldecken, Gestalt länglicher, Punk-  
tierung auffallend fein und oberflächlich. 1.5 mm. — Algier, Tunis.....  
..... **ovoideus Sic.**
- 40(39) Halsschild nicht auffallend schmaler, Gestalt rundlicher, Punktierung,  
deutlicher.
- 41(42) Halsschild mindestens ebenso stark punktiert wie die Flügeldecken.  
Makeln häufig verflossen 2-3 mm. — Nordafrika, aber auch Sene-  
gambien bis zum Cap. .... **sexguttatus Gyll.**
- 42(41) Halsschild 2-3 mal so fein punktiert wie die Flügeldecken.
- 43(44) Oben zart behaart, Makeln klein. 1.8 mm. — Griechenland. ....  
..... **fleischeri Ws.**
- 44(43) Oben ziemlich stark behaart, Makeln gross, quer, bräunlichgelb. 1.8-  
2 mm. — Syrien. .... **pharoides Mars.**
- 45(38) Arten aus Transkaukasus, Transkaspien oder Semirjetschensk. Zwei  
ähnlich gezeichnete Arten.
- 46(47) Halsschildbasis nur in der Mitte gerandet, Seitenrand der Flügel-  
decken nicht verdickt. 2 mm. — Transkaukasus, Transkaspien .....  
..... **smirnovi Dobzh.**
- 47(46) Halsschildbasis zur Gänze gerandet, Seitenrand der Flügeldecker  
verdickt. 2.3 mm. — Semirjetschensk ..... **heptapotamicus Dobzh.**
- 48(37) Flügeldecken mit je 2 Makeln oder bloss mit mehr oder weniger  
grosser Diskalfärbung.
- 49(54) Flügeldecken mit je 2 Makeln. Wenn diese am Seitenrande stehen,  
dann mitunter zu einer Längsmakel verflossen.
- 50(53) Oben zart behaart.
- 51(52) Griechenland. — 1.8 mm. .... **fleischeri ab. moestus Ws.**
- 52(51) Algier, Tunis. (Makeln mitunter verflossen : ab. *junctus* Pic). —  
2 mm. .... **anchorago ab. numidicus Pic**
- 53(50) Behaarung rauher. 2 mm. — Aegypten ..... **isisid Kirsch**
- 54(49) Flügeldecken mit mehr oder minder grösserer Diskalfärbung.

- 55(56) Diese Diskalfärbung schliesst einen schwarzen Punkt ein, 2-3 mm.  
 — Nordafrika ..... **sexguttatus ab. circumscriptus Mad.**
- 56(55) Die Diskalfärbung schliesst keinen schwarzen Punkt ein.
- 57(58) Griechenland. — Flügeldecken mit schmalen, dunklen Nahtsaum  
 und breitem Basal- und Aussensaum, 1.8 mm. ....  
 ..... **fleischeri ab. discopterus Ws.**
- 58(57) Algier, Tunis. — Nur äusserster Naht- und Seitenrand angedunkelt,  
 bei Zwischenformen vielleicht auch mehr, 2 mm. ....  
 ..... **anchorago Fairm. (ab.)**

### 3. *Pharoscymnus brunneosignatus* nov. spec.

Siehe auch vorstehende Tabelle, unter 23. — Eiförmig, nach hinten etwas zugespitzt, ziemlich gewölbt, glänzend, oben zart und nicht dicht grau, anliegend behaart, auf Halsschild und Flügeldecken gleichstark, fein und nicht dicht punktulierte. Halsschild so breit wie die Flügeldecken zwischen den Schulterbeulen, etwa dreimal so breit wie lang, Hinterwinkel stumpf gerundet, Vorderwinkel vorstehend, aber stumpf zugespitzt. Basis des Halsschildes gerandet. Kopf und Halsschild schwarz, Seiten des letzteren verwaschen begrenzt rotbräunlich. Schildchen klein, dreieckig, etwas vertieft. Flügeldecken gelb, mit rotbrauner Zeichnung: Ein grosser, dreieckiger Basalfleck, dessen Basis von einer Schulterecke zur anderen reicht und dessen Spitze auf der Naht etwas über ein Drittel der Nahtlänge liegt, ein vollständiger Aussensaum, der etwa ein Fünftel der Deckenbreite einnimmt und im übrigen etwas heller als die übrige Zeichnung ist, zwei zusammenhängende Makeln auf der Scheibe, die eine auf der Mitte der Scheibe, mit ihrem Hinterrande in gleicher Höhe wie die Spitze des grossen Basalfleckes, die zweite etwas weiter dahinter, aussen dem Aussensaum verbunden, innen mit ihrem inneren Ende mit der ersten zusammenhängend, ferner eine quere gemeinschaftliche Makel in  $\frac{2}{3}$  der Nahtlänge. Seitenrand sehr fein aufgekantet. Epipleuren der Flügeldecken rotbräunlich, ebenso die Unterseite, doch die Mitte mehr oder minder angedunkelt. Die Beine von heller Farbe. Diese Färbung wird sich bei grösseren Serien wohl variabel erweisen, wie auch die Deckenzeichnung der Type von einer dunklen, hell gefleckten Form abgeleitet zu sein scheint. L. 2 mm. — Wüste Gobi (Takla Makan). Holotype in meiner Sammlung. — Diese neue Art erscheint in der vorhergehenden Tabelle genügend abgegrenzt von ihren Gattungsgenossen.

### 4. *Pharoscymnus isidis* Kirsch

Bei dieser Art bin ich zu einigen Richtigstellungen gezwungen. Korschefsky (*Ent. Blätter*, 40, 1944, p. 135) schreibt, dass seine Ueberra-

schung gross war, als er bei Ansicht der Type feststellen konnte, dass diese als *Scymnus* beschriebene Art zur Gattung *Pharoscymnus* gehöre, bis heute aber in der Gattung *Scymnus* belassen wurde. Korschefsky stellt ferner meinen *Ph. eichleri* als Aberration zu dieser Art. Zunächst bemerke ich, dass ich selbst schon damals, 1937 (*Ent. Zeitschr.*, p. 285) feststellte, dass der *Scymnus isidis* Kirsch ein *Pharoscymnus* sei. Diese meine Feststellung war auch im *Zool. Record* berichtet und ich habe auch Herrn Korschefsky seinerzeit ein Separatum hierüber geschickt, sie konnte ihm daher nicht unbekannt sein. Ich hatte damals noch nicht jenes Material von *Ph. varius* Kirsch, wie heute, so dass ich nicht so weit ging, *varius* als eine Aberration von *isidis* anzusprechen, obwohl ich in meinem Zettelkatalog die für mich bestimmte Notiz « wahrscheinlich mit *varius* in einem Aberrations-Verhältnis stehend », gemacht hatte. Die Ansicht Korschefsky's ist aber einleuchtend, und wird daher ihre Richtigkeit haben. Falsch aber ist es, wenn er meinen *Ph. eichleri* als Aberration mit einfarbig gelben Flügeldecken zu *Ph. isidis* stellt, weil ihm ein Nachlesen meiner Beschreibung sagen müsste, dass *Ph. eichleri* eine ganz schwarze Art ist. Sollte er aber aus Versehen meinen *Ph. priesneri*, der hell ziegelrote Flügeldecken mit einem sehr schmalen schwarzen Aussensaum hat, gemeint haben, so spricht dagegen entschieden, dass *priesneri* anliegend behaart ist, während meine *varius* abstehehend, fast stuppig behaart sind. Es ist auch nicht ganz gut einzusehen, warum bei Ausbreitung hellgelber Flecke die Flügeldecken-Grundfarbe mehr rötlich wird, dass bei den aufgehellten Stücken von *varius* zunächst der Seitenrand sich aufhellt, bei *priesneri* aber der Aussenrand schwarz ist, wenn auch nur sehr schmal. Das letzte Uebergangsglied, ab. *brunneonotatus* Pic, habe ich noch nicht gesehen. Es ist auch auffallend, dass ich vom Fundort des *priesneri*, Sinai, kein einziges Stück des *varius* erhielt, der mir denselben aber mit Varianten in genügender Zahl von weit entfernten Lokalitäten sandte. Sei dem wie immer, *Ph. eichleri* m. ist eine von *isidis* und *varius* getrennte Art.

##### 5. *Pharus basalis* Kirsch

(Berl. Ent. Zl., 1870, p. 394)

Ist kein *Pharoscymnus* und gehört bereits entschieden als artgleich zu *Scymnus* (*Pullus*) *syriacus* Mars. Trotzdem schreibt Korschefsky (*Ent. Bl.*, 1944, p. 135), nach Ansicht der Type, dass diese Art schon 1879 von Weise als synonym zu *interruptus* Gz. erkannt worden ist. Diese Feststellung, die ausserdem nicht richtig ist, ist geeignet, neben dem *Col. Cat.* Verwirrung zu stiften, und auch die bereits entschiedene Frage, ob diese Art ein *Pullus* oder ein *Scymnus* s. str. ist, nochmals aufzuwerfen. Ich



halte es daher für nötig, die Geschichte dieser Art nochmals kurz festzustellen :

(a) Kirsch (l.c.) beschrieb diese Art als *Pharus* (umgekehrt ist sein *Scymnus* (*Nephus*) *isidis* ein wirklicher *Pharus*).

(b) Weise (*Zeitschr. Ent. Breslau*, 1879, p. 144; *Best. Tab. eur. Col.*, II, 1879, p. 57) versetzt nun den *Pharus basalis* Kirsch zu den *Scymninen* und zwar in die Untergattung *Pullus*. Er referiert ihn dort als selbständige Art No. 5. Es ist also daselbst keine Voraussetzung zu Korschefsky's Feststellung gegeben, unsomehr nicht, als Weise bei *Sc. interruptus* Gz. keinerlei Bezug auf die Kirsch'sche Art nimmt.

(c) Weise (*Best. Tab. eur. Col.*, II, 2. Aufl., 1885, p. 71) setzt den *Pharus basalis* Kirsch synonym zu *Scymnus* (*Pullus*) *syriacus* Mars., jener Art, die er 1879 in seiner Tabelle noch vermissen lässt. Also auch hier weist Weise die Art ausdrücklich der Untergattung *Pullus* zu, und nicht *Scymnus* s.str. Seite 78 und 79 finden wir keinerlei Anhaltspunkt, dass Weise die Art irgendwie mit *Sc. interruptus* Gz. in Beziehung gebracht hätte.

(d) Wohl aber hat Weise sowohl 1879, als auch 1885, den *Scymnus basalis* Redtb. (*Tent. Pseudotrim.*, 1843, p. 20) als blosse Färbungsvarietät zu *Scymnus interruptus* Gz. gestellt. *Scymnus basalis* Redtb. und *Pharus basalis* Kirsch sind nicht artgleich.

(e) Korschefsky (*Col. Cat.*, pars 118, 1931, p. 128) berichtet den *Pharus basalis* Kirsch als ein Synonym von *Scymnus interruptus* Gz., den *Sc. basalis* Redtb. als Aberration hiezu. Nachdem nach meinen obigen Ausführungen die Voraussetzungen für Korschefsky's Synonymie nicht gegeben sind, ist dieses Synonym im *Col. Cat.*, pars 118, p. 128, zu streichen und p. 140 bei der Art *syriacus* zuzufügen.

(f) Ein einfacher Vergleich des allbekannten *Sc. interruptus* mit der Beschreibung des *Pharus basalis*, lässt schon erkennen, dass beide Arten nicht identisch sind und daher die angefochtene Synonymie hinfällig ist. Ich kenne die Type des *basalis* nicht, wohl aber lässt die Beschreibung die Artgleichheit mit dem *Sc. syriacus* ohne weiteres erkennen. Kirsch spricht von helleren und dunkleren Exemplaren. Die ersteren decken sich am meisten mit den von Marseul beschriebenen Stücken des *syriacus*, die dunklen Exemplare könnte man unter Beibehaltung des Namens *basalis* Kirsch (nec Redtb.) als Aberration bezeichnen. Darnach ergäbe sich folgende Zusammenstellung :

(a) Die gemeinsame schwarze Basalbinde der Flügeldecken reicht nach aussen bis an den Seitenrand. Auch der Seitenrand und die Epipleuren schwarz, die Makel auf der Scheibe und die Querbinde vor der Spitze fliessen mit dem Seitenrande zusammen und an der Spitze verbleibt nur ein sehr



schmaler Rand gelb. Der braune Nahtsaum wird oft auch schwarz. Bei diesen dunkelsten Stücken sind auch meist die Schenkel mehr oder weniger schwarz. (Eine Umbenennung wegen *basalis* Redtb. unterlasse ich, weil Aberrationsnamen dem Prioritätsgesetze nicht unterliegen) .....

..... *syriacus* ab. *basalis* Kirsch (nec Redtb.)

(b) Die gemeinsame schwarze Basalbinde geht nicht über die Schulterbeule hinaus, vorne kein dunkler Seitensaum, die übrigen Makeln isolierter. ....

..... *syriacus* Mars. f. nom

(c) Die hellsten Formen : Flügeldecken haben nur je 2 oder 3 schwarze Makeln, die 1. gross, nahe der Naht, basal, die 2. dick, diskal, etwas quer, und oft die Zusammensetzung aus 2 Makeln vermuten lassend, die 3. strichförmig vor der Spitze, oft aber fehlend ..... ab. *amoenus* Ws.

Zwischen diesen drei Formen gibt es eine Anzahl von Uebergängen, und es ist gleichgültig, ob jemand die Namen für die beiden Extreme aufrecht erhalten will oder nicht, wenn aber Weise die hellsten Formen benannte, dann können ebenso gut die dunkelsten Stücke benannt sein.

Wenn nun jemand die Mühe nicht scheut, die entsprechenden Originalbeschreibungen nachzulesen, dann ist der Beweis gelungen : *Pharus basalis* Kirsch gehört zu *Pullus syriacus* Mars. und nicht zu *Scymnus interruptus* Gz.

# *Amata (Syntomis) damarensis* Grünb. als selbständige Art

[ Lepidoptera : Syntomidae ]

(mit 2 Textfiguren)

von N. OBRAZTSOV, München

(Zoologische Sammlung des Bayerischen Staates)

Die afrikanische *Syntomis damarensis* Grünb. wurde als selbständige Art auf Grund eines einzelnen männlichen Stückes aufgestellt, von späteren Autoren (Hampson, 1914; Seitz, 1926) aber als eine Unterart der *Amata (Syntomis) alicia* Btlr. angesprochen. Die Untersuchung der mir vorliegenden Topotypen (2 ♂♂ und 1 ♀) von *damarensis* in der Bayerischen Zoologischen Staatssammlung hat jedoch gezeigt, dass es sich hier zweifellos um eine ganz verschiedene und sogar nicht sehr nahe verwandte Art handelt, die nur äusserlich der *alicia* sehr ähnlich aussieht. Ich möchte hier ausdrücklich betonen, dass das mir vorliegende Weibchen von *damarensis* ein zweifellos aberratives Stück darstellt und dass ich es keinesfalls als eine typische weibliche Form der Art anspreche.

## *Amata (Syntomis) damarensis* Grünb.

*Syntomis damarensis* Grünberg, *Denkschr. Med. Ges. Jena*, XVI, 1910, p. 122, t. III, f. 6; Zerny, *Wagner's Lep. Cat.*, VII, 1912, p. 14.

*Amata alicia* (Btlr.) ssp. *damarensis* Hampson, *Cat. Lep. Phal.*, Suppl. I, 1914, p. 28; (*Syntomis* — —) Seitz, *Gross-Schm. Erde* XIV, 1926, p. 44, t. 3g, f. 5.

Stimmt mit *Amata (Syntomis) alicia* Btlr. in den meisten äusseren Merkmalen überein. Das Ziegelrot der thorakalen Lateralflecke der Unterseite und der Hinterleibsgürtelung mehr ins Orangegelbe ziehend. Vorderflügelänge : 15-16 mm.

Vorderflügelmakel  $m_1$  basalwärts merklich zugespitzt und breiter als  $m_4$ ;  $m_2$  basalwärts verschmälert;  $m_3$  mehr oder weniger länglich oval;  $m_4$  bedeutend schmaler als die übrigen Makel der Aussenreihe, so lang wie  $m_6$ .

oder kürzer;  $m_5$  mit  $m_6$  gleich lang oder etwas kürzer; der letztere ( $m_6$ ) steht dem  $m_5$  deutlich näher als die übrigen Makel der Aussenreihe. Hinterflügelmakel wie bei *alicia*.

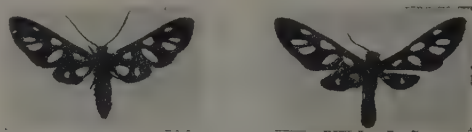


Fig. 1 : Männchen (links) und Weibchen (rechts) von *Amata (Syntomis) damarensis* Grünb.; Windhuk (Damara-Land).

Männlicher Kopulationsapparat (Fig. 2, A-C) : Tegumen schlank, ohne Seitenlappen; Uncus von der Basis zum Apex hin allmählich zugespitzt und in gleicher Weise ausgebogen; Saccus lang und gerade, links verschoben. Valvae fast symmetrisch und unterscheiden sich voneinander hauptsächlich nur durch die verschiedenen Processes basales; der obere Winkel der Valva

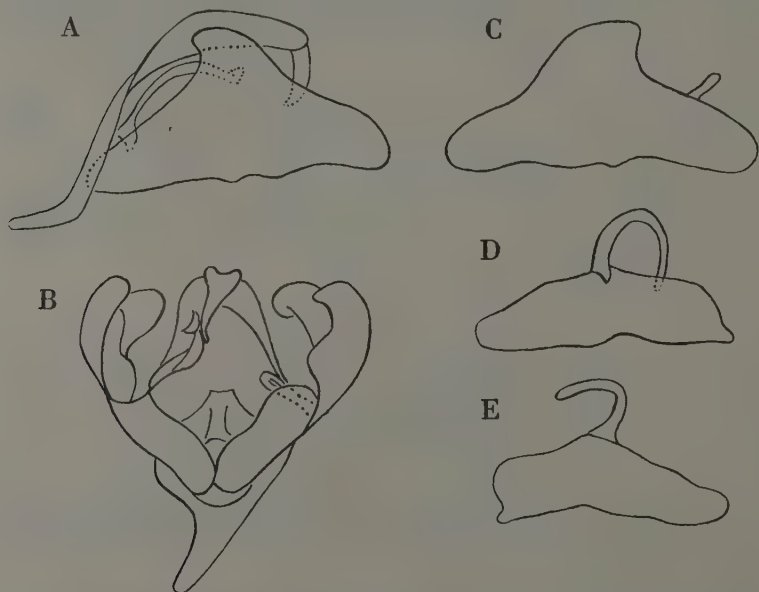


Fig. 2 : Männliche Genitalien von *Amata (Syntomis) damarensis* Grünb. (A-C; Präp. N° S.016; Windhuk) und *A. (S.) alicia* Btlr. (D,E; Präp. N° S.018; Wau). —  $\times 20$ .

(A) Ansicht von der linken Seite; (B) von unten gesehen; C, E) rechte; (D) linke Valva von aussen.

gross, oralwärts gekrümmt; Analwinkel ausgezogen, abgerundet; Unterrand mit einem kleinen Höckerchen in der Mitte; Sacculus stark gewölbt; Processus basalis der linken Valva bedeutend grösser als der rechten, er endet mit zwei Spitzen; der rechte Processus basalis kurz, mit einer einfachen Spitze.

Das bis jetzt unbekannte Weibchen der Art ist dem Männchen sehr ähnlich, zeigt aber im vorliegenden Exemplar teilweise verschmolzene Vorderflügelmakel  $m_1$  und  $m_3$ ; Basalmakel der Hinterflügel sehr klein, kaum grösser als der distale.

Die Art ist vorläufig nur aus Damara-Land (S.W. Afrika) bekannt. Die mir vorliegenden Exemplare stammen vom typischen Fundort: 2 ♂♂ und 1 ♀ von Windhuk (Damara-Land), e coll. Knier und befinden sich in der Zoologischen Sammlung des Bayerischen Staates (München).

Die Art ist vorläufig nur aus Damara-Land (S. W. Afrika) bekannt. *alicia* Btlr. von Wau (O. Sudan) zeigen grosse Unterschiede der *damarensis* gegenüber. Die beiden Valvae (Fig. 2, D und E) haben eine ganz andere Form, ihre oberen Winkel sind unentwickelt, bei beiden Processus basales sind mit abgelenkten Fortsätzen bewehrt. *A. damarensis* steht der *endocrocis* Hmps. viel näher als der *alicia* Btlr. und scheint mit erster eine natürliche Gruppe zu bilden.

Bei dieser Gelegenheit möchte ich betonen, dass die von Berio (*Mem. Soc. Ent. Ital.*, XX, 1941, p. 118-121) als "gruppo di *cerbera* L." aufgefassen Arten nach ihrem Genitalienbau verschiedenen Gruppen angehören. Nämlich:

(1) Processus basales (= transtilla und labides Berio) fast symmetrisch auf beiden Valvae, mit abgelenkten Fortsätzen (*cerbera* L., *alicia* Btlr., *mogadorensis* Blach., *magnopupillata* Berio, *magretti* Berio). Verwandt mit *divisa*- und *phegea*-Gruppe.

(2) Processus basales der beiden Valvae asymmetrisch; der der rechten Valva ohne Fortsatz (*damarensis* Grünb., *endocrocis* Hmps.). Verwandt mit der *polymita*-Gruppe.

(3) Processus basales ohne Fortsätze auf beiden Valvae, einfach (*romei* Berio). Vorläufig kann ich keine andere Art dieser Gruppe nennen und ihre Verwandtschaft bleibt mir noch unklar.

Demzufolge bin ich geneigt die äussere Ähnlichkeit aller erwähnten Arten nur durch einen chromatischen Parallelismus zu erklären, der für die ganze Familie Amatidae so charakteristisch ist und keinesfalls die Verwandtschaft der Arten beweist.





# Genera Thysanopterorum

## KEYS FOR THE IDENTIFICATION

## OF THE GENERA OF THE ORDER THYSANOPTERA

by Prof. Dr. H. PRIESNER

### Introduction

In 1921, H. H. Karny published (Treubia, I, 1921, pp. 211-261) for the first time keys for the identification of the genera of the Thysanoptera. For years I have been using Karny's keys with great advantage, and I have tried since to make additions to, and alterations on, them according to the advance of our knowledge. Publication of these revised keys had to be postponed again and again, as every year a considerable number of new genera were described that would have put the keys out of date soon after their publication. In the early 1930's, I had completely revised them with a view to make them more reliable, dropping completely the original adaptation of the keys — of the *Thripidae* and *Phlaeothripidae* — to the existing system, i.e., the division of the families into subfamilies and lower groups.

One has always to keep in mind that a key for determination has its aim in providing the student with a means of correctly identifying an insect, and that the more or less close relationships of the genera have no direct influence upon the attaining of the above aim. On the contrary, a too obsequious attachment to the system reduces in many cases the reliability of the keys, because often more difficult characters have to be employed than when one more or less neglects the natural relationship. The only aim of an identification key remains to obtain the correct name with the greatest possible certainty, and thus there is no need to copy the system. Our keys are based upon this principle.

As to the practical use of these « Genera Thysanopterorum », as I make bold to entitle them only for the sake of facilitating quotation, I may add a few remarks.

A fair knowledge — from the part of the user → of the general morphology of the Thysanoptera is anticipated; this can be obtained by a study

of the introductory chapters of any of the existing monographs on the subject, side by side with a slide collection, containing perfectly mounted specimens. The keys are certainly not intended to be composed for Entomologists who have never studied thrips before, they would discourage them. Thus the advanced student will have no difficulties on encountering expressions as « chirithripoid », « dendrothripoid », etc., or « habitus of ... », and he will prefer them to a detailed description of all the characters concerned. On endeavouring to identify a certain species the student may not find all the characters given in the keys exactly corresponding with those shown in the specimens at hand; it must not follow, however, that he has discovered a new genus. Thysanoptera are very difficult subjects, and in cases as the above mentioned, I should like to advise the student to consult on the matter a more experienced co-worker, before publishing the supposedly new type.

Particular attention should be paid to the common occurrence of monstrosities, especially in the development of the antennae; these monstrosities are due — at least in the majority of instances — to mutilations in the larval stage <sup>(1)</sup>. Such abnormally built antennae are usually recognized by their unilateral development, though in very rare cases, both antennae may show bilaterally developed malformation.

With regard to identifications by means of the key on the *Thripidae*, it is preferable to take female specimens first, as the generic characters, at least in the majority of cases, are based upon this sex. After some experience it will be possible to identify the males too.

One should not confuse the *tooth* on the fore tarsi of many *Phlaeothripidae* with the *claw*; the latter, though situated apically, may sometimes be of the same size and shape as the tarsal tooth, especially when it is exerted.

In some genera a marked difference exists between macropterous and brachypterous or apterous forms, and I do not doubt that certain genera, based chiefly on characters connected with the development of the organs of flight, will have to be revised in future, as to their validity. The males of many genera of the *Phlaeothripidae* occur in two extreme types, a weak (gynaecoid) and a stout (oedymereous) form, both forms being linked up by gradual transitions. The oedymereous habitus does not express itself only in the general build of the body, but particularly also in the enlargement or thickening of the fore legs and their appendages (e.g. tarsal tooth), the elongation of the head (not incrassation) and antennae, and in other details. I have endeavoured to adapt the keys to these peculiarities which have some-

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<sup>(1)</sup> A. A. S. Ghabn: Zur Biologie und Bekämpfung eines neuen Nelkenschädling aus der Gruppe der Thysanopteren in Aegypten (Dissertation, Berlin 1931, p. 24).

times made necessary one or several repetitions of certain genera (e.g. *Crypta-plothrips*, *Hoplandrothrips*, *Gynaikothrips*) in the key of Phlaeothripidae.

Certain other genera (*Eothrips*, *Eugynothrips*, *Diceratothrips*, and many others) are not studied yet thoroughly enough, as to their elements. Much revisional spade work will be necessary for them, and some species, described under an original generic name will have to be transferred to other genera. It is one of our main troubles in thysanopterological taxonomy that many species are still within the wrong genus, this being either due to the difficulty of the special subject, or to careless work of the authors concerned.

References to the descriptions of the genera, as contained in the keys, are given in the alphabetical index at the end of this paper; this index also enumerates all synonyms and most misprints. The paper is supposed to contain all genera that were published until 1945.

In the order Thysanoptera I only recognise the families : *Aeolothripidae*, *Merothripidae*, *Heterothripidae* and *Thripidae*, within the subordo Terebrantia, and the *Phlaeothripidae* in the subordo Tubulifera. I no longer consider as such the former families *Eupathithripidae*, *Idolothripidae*, etc., as they are much more closely related to types like *Cercothrips* or *Cryptothrips*, than is the *Plectrothrips*-group to *Hoplothrips*, which latter were always considered to belong to one family. The *Chirothripoididae* are, as Hood and myself have already stated, members of the *Plectrothripini*. Even the *Pygothripidae* and the *Urothripidae* are untenable as families. The latter have lost family rank by the discovery of *Octurothrips*, whose antennae are typically phlaeothripoid, the former differ from the rest of the *Phlaeothripidae* only by a few characters of generic value.

The subdivisions lower than subfamilies, given in the following table on the system, are not considered as final; the further separation of tribes, though it may be indicated, I consider for the moment unadvisable, in order to avoid the shifting to and fro of genera from one tribe to another, which would happen in the present state of uncertainty as to the correct position of many genera. For years to come, our main task must remain the continuation of the thrips survey of the world, the description of the unknown species found, and the allotment of them to different genera, together with revisions of the genera and species described hitherto, a work that is far from completion.

My thanks are due to Prof. J.D. Hood (Cornell University, Ithaca) and Prof. J.C. Faure (University of Pretoria) for many kindnesses, especially for supplying me with descriptions of genera that have appeared in the more recent years.

**The REVISED SYSTEM****Ordo THYSANOPTERA****I. Subordo Terebrantia****1. Superfamilia Aeolothripidae**

## Familia Aeolothripidae

Subfamilia Erotidothripinae; subfamilia Melanthripinae; subfamilia Mymarothripinae; subfamilia Aeolothripinae (Tribus : Orothripini, Fanklinothripini, Aeolothripini).

**2. Superfamilia Merothripoidea**

## Familia Merothripidae

**3. Superfamilia Thripoidea**

Familia Heterothripidae (Tribus : Heterothripini, Hemithripini, Opadothripini, Fauriellini).

## Familia Thripidae

Subfamilia Heliothripinae; subfamilia Thripinae (Tribus : Dendrothripini, Sericothripini, Anaphothripini, Chirothripini, Thripini).

**II. Subordo Tubulifera**

## Familia Phlaeothripidae

Subfamilia Hydiiothripinae; subfamilia Phlaeothripinae (Tribus : Phlaeothripini, Eupathithripini, Hoplothripini, Haplothripini, Hystriothripini, Plectrothripini); subfamilia Megathripinae (Tribus : Megathripini, Compsothripini); subfamilia Pygothripinae; subfamilia Urothripinae.

**I. The HIGHER GROUPS <sup>(2)</sup>**

A(H) Female with an ovipositor formed of two pairs of gonapophyses arising from segments VIII and IX of abdomen; tenth abdominal segment seldom tubular, in all cases split ventrally; apex of male abdomen bluntly rounded, never tubular. Wings usually closely set with micro-

(<sup>2</sup>) The fossil genus *Liassothrips* nom. nov. (= *Mesothrips* Martynov nec Zimm.) may represent a special superfamily. It cannot be placed in the system before re-examination.

- trichia. Fore wing with costal vein and nearly always at least one longitudinal vein attaining tip ..... **Subordo Terebrantia Hal.**
- B(C) Ovipositor curved upward. Wings broad and rounded at apex. Body never depressed. Antennae 9-segmented. ....  
..... **Superfamilia Aeolothripoidea Hood, Familia Aeolothripidae**
- C(B) Ovipositor curved downward. Wings narrower, almost always pointed at tip. Body more or less depressed.
- D(E) Pronotum with dorsal longitudinal sutures. Surface of wings smooth. Antennae moniliform, 8-9-segmented, without style, joints 3 and 4 without sense-cones, each with a tympanum-like sensory area at apex. Anterior and posterior femora greatly enlarged. Abdomen blunt, ovipositor very weak, probably functionless. ....  
..... **Superfamilia Merothripoidea Pr., Familia Merothripidae Hood**
- E(D) Pronotum without distinct dorsal sutures. Surface of wings pubescent. Antennae not moniliform. Ovipositor well developed. ....  
..... **Superfamilia Thripoidea Hood**
- F(G) Antennae without sense-cones or with short, triangular ones, 9- to 10-segmented, joint 3 either conical or cylindrical. Fore tarsus usually with a claw-like appendage at *base of second* segment. ....  
..... **Familia Heterothripidae Bagn.**
- G(F) Antennae, with slender sense-cones which are simple or forked, 6- to 9-segmented. Tarsi in some cases with claw-like appendages, either at *apex of first or second* tarsal joint. .... **Familia Thripidae Uzel**
- H(A) Female without ovipositor; tenth abdominal segment of both sexes not split beneath, almost always tubiform. Wings without microtrichia, with only few basal bristles, without costal vein, with a rudiment of a longitudinal vein; a long fringe developed. ....  
..... **Subordo Tubulifera Hal.: Familia Phlaeothripidae Uzel**

## II. The GENERA

### Subordo Terebrantia

#### 1. Superfamilia Aeolothripoidea

##### Familia Aeolothripidae <sup>(3)</sup>

- 1(18) Body setose, prothorax at least at posterior margin with a series of prominent bristles. Vertex mostly with at least one pair of conspicuous bristles. Maxillary and labial palpi two- to three-segmented.

<sup>(3)</sup> The fossil genus *Palaeothrips* Scudder, said to be allied to *Aeolothrips* L., has 7-segmented antennae. It cannot be included in the key before the type will have been re-examined.



- Distal antennal joints separated. Sense-cones not placed longitudinally ; joint 3 not parallel-sided.
- 2 (3) Vertex without prominent bristles. Joints 5 to 7 of antennae vasi-form. Fore tibiae with hook-like tooth within, fore tarsi unarmed. Fore and hind femora enlarged. Wings nearly pointed at apex. (*Erotidothripinae* Pries.). ..... **Erotidothrips Pries.**
- 3 (2) Vertex with at least one pair of prominent bristles. Joints 5 to 7 of antennae never vasi-form. Fore tibiae without tooth but mostly with spines, fore tarsi with small hook. Hind femora not enlarged. Wings more or less broadly rounded at apex (*Melanthripinae* Bagn.).
- 4(11) All antennal joints simple, without projections.
- 5 (6) Head between eyes produced into a horizontal dentate process. Antennal joints (from joint 2) provided with transversal ringlets. .... **Dorythrips Hood**
- 6 (5) Head without dentate process.
- 7 (8) Antennal joints without ringlets. Fore tibiae with a spur at apex. .... **Melanthrips Hal.**
- a(b) Wings without cross-bands, uniformly greyish, or pale at base. .... **Melanthrips subg. Melanthrips s.str.**
- b(a) Fore wings hyaline with two large cross-bands, one of them at apex. Antennal joints 3 and 4 pale. .... **Melanthrips subg. Dichropterothrips Pries.**
- 8 (7) Antennal joints 3 to 9 with distinct ringlets. Fore tibiae without spur. Fore tarsi with hook-like appendix.
- 9(10) Fore femora with a series of teeth within and without. .... **Dactuliothrips Moul.**
- 10 (9) Fore femora without a series of teeth. .... **Eoceranothrips Bagn. (fossil)**
- 11 (4) Joint 1 or 2 of antennae produced into a tooth-like process.
- 12(13) Joint 1 with a tooth-like process. Antennal joints provided with ringlets. .... **Granothrips Bagn.**
- 13(12) Joint 2 produced.
- 14(17) Hind angles of prothorax with one or two long bristles each.
- 15(16) Hind angles of prothorax with two long bristles. .... **Ankothrips D.L. Crawford.**
- a(b) Mouth-cone long and pointed, decidedly surpassing base of prosternum. .... **Ankothrips subg. Prionohipps Schille**
- b(a) Mouth-cone short. .... **Ankothrips subg. Ankothrips s.str.**
- 16(15) Hind angles of prothorax with one long bristle. .... **Promelanthrips Pr. (fossil)**
- 17(14) Hind angles of prothorax with but short bristles. Antennal joint 9 with



- four pale transversal sutures. Tergite IX of male with a forked dorsal process. .... **Archankothrips Pries. (fossil)**
- 18 (1) **Prothorax** without a series of conspicuous bristles at hind margin, at the most with somewhat longer setae at the hind angles. Vertex mostly without conspicuous bristles. Antennal joint 3 elongate, sometimes very long, usually nearly parallel-sided.
- 19(20) Wings decidedly widened towards apex, racket-shaped. Antennae stout, with conspicuous rigid bristles. Head with long ante-ocular seta, and some others too. Maxillary palpi 8-segmented, labial palpi 4-segmented (*Mymarothripinae* Pries.). .... **Mymarothrips Bagn.**
- 20(19) Wings at most slightly widened towards apex. Antennae without raised bristles. Head without conspicuous bristles, usually also the prothorax without longer bristles (*Aeolothripinae* Bagn.).
- 21(34) Maxillary palpi with 7 to 8, rarely with 5 joints, i.e., a large basal joint is followed, as a rule, by a repeatedly divided terminal one. Labial palpi with 3 to 5 joints (*Orothripini* Pr.).
- 22(25) Even the terminal antennal joints distinctly separated from one another, joints 5, 6 and 7 laterally convex, and, therefore, narrowed towards base and apex as well.
- 23(24) Fore wings considerably widened towards apex. .... **Lithadothrips Scudder (fossil)**
- 24(23) Fore wings slightly widened towards apex, fore margin straight. Wings banded. .... **Orothrips Moul.**
- 25(22) Antennal joints more parallel-sided, 6 and 7 not narrowed towards apex, some joints of apical portion of antennae forming, therefore, an entire unit.
- 26(31) Wings with pale and dark cross-bars; often somewhat widened towards apex.
- 27(30) Labial palpi 4-segmented.
- 28(29) Sensory area of joints 3 and 4 long and fine, straight (easily overlooked owing to its lateral position); three terminal antennal joints somewhat united. .... **Stomatothrips Hood**
- 29(28) Sensory areas of joints 3 and 4 vermicular; joints 6 to 9 united. .... **Allelothrips Bagn.**
- 30(27) Labial palpi 3-jointed; joints 5 to 9 of antennae united. .... **Desmothrips Bagn.**
- 31(26) Wings with dark cross-bar, parallel-sided.
- 32(33) Maxillary palpi 8-segmented. Sensory areas of joints 3 and 4 situated at apex. .... **Erythrothrips Moul.**
- 33(32) Maxillary palpi 5-jointed. Sensory areas on joints 3 and 4 extended over the length of the joints. .... **Audiothrips Moul.**

- 34(21) Maxillary palpi 2- to 4-jointed, labial palpi 3- or 4-jointed.
- 35(38) Antennae very long and slender, filiform, joint 3 at least 10 times as long as broad. Sensory areas very thin and long, situated laterally <sup>(4)</sup>. Cross-veins of wings weak, wings narrow, slightly widened towards apex. Maxillary palpi 3-segmented (*Franklinothripini* Pr.).
- 36(37) Head produced in front into a long conical process. Prothorax slightly widened posteriorly. .... **Gorynothripoides Bagn.**
- 37(36) Head normal, roundish. Prothorax widened anteriorly. .... **Franklinothrips Back**
- 38(35) Antennae stouter, joint 3 shorter, not really filiform (*Acolothripini* Pr.)
- 39(40) Joints 3 and 4 of antennae each with a long, vermicularly winding sensory area. Maxillary and labial palpi 4-segmented. .... **Euceratothrips Hood; cf. Rhipidothripiella Bagn.**
- 40(39) Sensory areas not vermicular, or maxillary palpi 3-jointed.
- 41(48) The three terminal antennal joints united.
- 42(43) Segment IX of abdomen unusually elongated. Wings not banded, with conspicuous cross-veins. Pronotum with bristles at fore and hind angles and at the sides. Antennae as in *Rhipidothrips*, but joints 3 to 5 of about equal length. .... **cf. Rhipidothripoides Bagn. (fossil)**
- 43(42) Segment IX of abdomen normal <sup>(5)</sup>.
- 44(45) Pronotum with a fairly conspicuous bristle at posterior angles. Wings not banded. Joints 7 to 9 of antennae united. The sensoria represent lenticular, distally placed areas. Maxillary palpi distinctly 3-jointed. .... **Rhipidothrips Uzel**
- 45(44) Pronotum without prominent bristles.
- 46(47) Sensoria on joints 3 and 4 elongate, straight, not reaching basal half. Head not much broader than long. Maxillary palpi apparently 2-segmented, joint 2 with faint indication of a further segmentation. Joints 5 to 9 of antennae somewhat united. Wings widened towards apex, without cross-veins. .... **Arhipidothrips Bagn.**
- 47(46) Sensoria moniliform, doubled i.e., developed on either side of joint. Head about as long as broad. Maxillary palpi 3-segmented, joint 3 with indication of a further segmentation. Wings as in the above genus. .... **Rhipidothripiella Bagn.**
- 48(41) The four to six terminal antennal joints united.
- 49(50) Wings narrow, much widened towards tip, without cross-veins. Joint

(4) All previous statements on sensory areas being absent in this group are incorrect.

(5) The genus *Palaeothrips* Scudder should come in here, if it did not belong to the Melanthripinae (as perhaps *Rhipidothripoides*), though this is less likely the case than for *Rhipidothripoides* Bagn.

- 2 of maxillary palpi with some segmentation, palpi, therefore, 3- to 4-jointed. .... **Pseudaeolothrips Bagn.; cf. Arhipidothrips Bagn.**
- 50(49) Wings with cross-veins, and also otherwise different.
- 51(52) Fore wings not banded. Joints 4-6 united; joint 3 with terminal thickening. Fore margin of wings without fringe. ....  
..... **Lamprothrips Moul.**
- 52(51) Fore wings banded, transversally or longitudinally. Antennal joint 3 without apical thickening.
- 53(54) Sensory area on joint 3 linear, but somewhat circumpolar, running around apical margin; area of joints 5 and 6 elongate. ....  
..... **cf. Desmothrips Hood**
- 54(53) Sensory area on joints 3 and 4 linear, that on 4 sometimes slightly curved; areas on joints 5 and 6 dot-like, not elongate. ....  
..... **Aeolothrips Hal.**
- a(b) Abdominal segment IX of male without claspers. ....  
..... **Aeolothrips subg. Aeolothrips s. str.**
- b(a) Abdominal segment IX with claspers. ....  
..... **Aeolothrips subg. Coleothrips Hal.**

### Superfamilia Merothripoidea

#### Familia Merothripidae

- 1 (2) Antennae 9-segmented. .... **Praemerothrips Pries. (fossil)**
- 2 (1) Antennae 8-segmented. .... **Merothrips Hood**

### Superfamilia Thripoidea

#### Familia Heterothripidae

- A(B) Cephalic, pronotal and wing bristles *abnormally long and stout*. Joints 7 to 9 of antennae small, closely united and together about as long as 6 which is longer than 5. Wings and legs long and slender. ....  
..... **Electrothrips Bagn. (fossil).**
- B(A) Not these characters combined.
- 1 (2) Antennal joints 3 and 4 conical, without sense-cones, but each with a circumpolar, porose sensory area (*Heterothripini* nov.). ....  
..... **Heterothrips Hood**
- a(b) The three terminal antennal joints more closely united, much shorter than joint 7. .... **Heterothrips subg. Protelnothrips Hood**
- b(a) Antennae normal. .... **Heterothrips subg. Heterothrips s.str.**
- 2 (1) Without a circumpolar sensory area on apices of joints 3 and 4, or the area is only developed on their under side, and is not porose.

- 3 (4) Antennal joints 3 and 4 cylindrical or nearly so. Joints without conspicuous small rings (*Hemithripini* nov.). ..... **Hemithrips Bagn. (fossil) (Protothrips Pries.)**
- 4 (3) Antennal joints 3 and 4 not exactly cylindrical, always somewhat widened towards apex; as far as known with characteristical triangular sense-cones, joints 5 and 6 with simple, normal sense-cones. In some cases with a non-porose, apical sensory area.
- 5 (6) Terminal abdominal segment long, cylindrical, tubiform. Prothorax with long lateral and postero-angular bristles. .... **Stenurothrips Bagn. (fossil).**
- 6 (5) Terminal abdominal segment not tubiform.
- 7(14) Joints 3 and 4 of antennae with a short, triangular sense-cone, which is constricted at base (*Opadothripini* nov.).
- 8(11) Head with long postocular, prothorax with long postero-angular bristles.
- 9(10) Antennal joints elongate, terminal joint slender. .... **Opadothrips Pries. (fossil).**
- 10 (9) Antennal joints less elongate, terminal joint about twice as long as wide. .... **Oligothrips Moult.**
- 11 (8) Head without long postocular bristles.
- 12(13) Prothorax with a series of postero-marginal setae the angular of which being longest, and with two conspicuous setae at each fore angle. .... **Holarthrothrips Bagn.**
- 13(12) Prothorax without conspicuous bristle at posterior angle; with only one forwardly directed seta at fore angles. .... **Adiheterothrips Ram.**
- 14 (7) Antennal joints 3 and 4 with a somewhat raised sensory area at apex beneath (*Fauriellini* nov.).
- 15(16) Antennae 9-segmented. .... **Fauriella Hood**
- 16(15) Antennae 8-segmented. .... **Opisthothrips Hood**

Note : The fossil genus *Telothrips* Pries. is similar to *Heterothrips*; it has, however, forked sense-cones and has, therefore, to be placed in the family Thripidae. Position of *Eocephalothrips* Bgn. doubtful.

#### Familia Thripidae

- 1(62) Surface of body with conspicuous polygonal reticulation. Apex of antennae, as a rule, hastate, heliothripoid (v.p. 43).
- 2(55) Apex of abdomen not cylindrical and at the same time set with stout spines (v.p. 43).
- 3 (8) Antennae 5- or 6-jointed.
- 4 (5) Wing veins with stout lanceolate bristles. Antennae 6-jointed, style 1-jointed. .... **Hoodothrips Bondar**
- 5 (4) Wings without lanceolate bristles.

- 6 (7) Antennae 6-jointed, joints 6 and 7 fused. Head narrowed posteriorly, rounded. .... **Astrothrips Karny; cf. Trypactothrips Bagn.**
- 7 (6) Antennae 5-jointed, joints 5 to 7 fused. Head slightly narrowed posteriorly, strongly ring-like constricted before base. .... **Astrothrips subg. Gamothrips Bagn.**
- 8 (3) Antennae with more than 6 joints.
- 9(54) The first six antennal joints normal, more or less separated from one another. Style 1- to 2-jointed.
- 10(51) Wings fully developed (v.p. 42).
- 11(48) Style 2-jointed.
- 12(47) Head without projections at cheeks, but sometimes with collar-like structure, or cheeks strongly convex.
- 13(18) Prothorax with lamelliform margins or partly plate-like projections.
- 14(15) Style not longer than antennal joint 6; joint 2 of style less than twice as long as joint 1. .... **Australothrips Bagn.**
- 15(14) Joint 2 of style long, setiform.
- 16(17) Wings narrow, without reticulation. .... **cf. Dinurothrips Hood**
- 17(16) Wings very broad, the whole surface with net-like structure. One median longitudinal vein present. Fossil genus. .... **Gerontothrips m.**
- 18(13) Sides of prothorax without projections.
- 19(26) Fore wing at costal margin either nearly without bristles or fringe hairs, or with very long straight, knobbed bristles.
- 20(25) Fore wings without bristles at costal margin.
- 21(22) Surface of body not reticulate, but strongly wrinkled, with circular fold around eyes. Head somewhat broader than long. Male with fan-shaped scale on segment IX of abdomen. Antennae much as in *Heliothrips*. .... **Rhipiphorothrips Morg.**
- 22(21) Surface reticulate.
- 23(24) Head strongly transverse. Antennal joint 6 longest; 5 to 8 forming a long and slender unit. Wings with one thick circular, and one longitudinal vein. .... **cf. Australothrips Bagn.**
- 24(23) Head scarcely broader than long. Antennal joint 3 longest. Wings with about 15 longitudinal rows of closely set dots, without conspicuous veins. .... **Aneurothrips Karny**
- 25(20) Fore wings at costal margin with very long, stout, knobbed bristles. ... **Echinothrips Moul.**
- 26(19) Costal margin of fore wing normally setose, or fringed at least in distal portion.
- 27(28) End of abdomen with very stout spines. .... **cf. 55**
- 28(27) End of abdomen at most with stout bristles.
- 29(30) Joint 2 of style about as long as joint 1. Reticulation faint. .... **Dictyothrips Uz**



- 30(29) Joint 2 of style distinctly longer than joint 1.
- 31(34) Pronotum without net-like structure; head smooth in front, but a narrow space at hind margin, the metanotum and the intermediate abdominal segments reticulate. Wings with long setae.
- 32(33) Anterior part of body with long bristles. .... **Monilothrips Moul.**
- 33(32) Anterior part of body without long bristles. ....  
 ..... **cf. Selenothrips Ka., cf. Dictyothrips Uz.**
- 34(31) Pronotum reticulate or also part of the head with net-like structure.
- 35(36) Body very slender, mouth-cone very long, surpassing base of mesosternum. Wings narrow, veins inconspicuous, costa with stout, hyaline bristles. .... **Aorathrips Pries.**
- 36(35) Body not very long and slender. Mouth-cone normal or short, broadly rounded.
- 37(44) Wings normal. Intermediate antennal joints with forked trichomes.
- 38(41) Antennae heliothripoid.
- 39(40) Head near base (neck) with tooth-like projection. Pronotum strongly transverse, much shorter than head. .... **Hercinotrips Bagn.**
- 40(39) Head without projection. Pronotum not so strongly transverse. ....  
 ..... **Caliothrips Dan. (Hercotrips Hood)**
- 41(38) Antennae not heliothripoid. Terminal segments of abdomen long.
- 42(43) Antennal joint 4 vasiform. .... **Amphorothrips Pries.**
- 43(42) Antennal joint 4 normal, all joints with transversal annulation. Body yellow. .... **cf. Dictyothrips Uz.**
- 44(37) Wings narrow, much widened at base, narrowly rounded at apex, upper vein fused with costa. In Heliothrips, trichomes on joints 3 and 4 simple.
- 45(46) Pronotum nearly twice as broad as long. Cheeks at least as long as eyes. Vertex without arched ridge. Wings pale. .... **Heliothrips Hal.**
- 46(45) Pronotum about 1.5 times as broad as long. Cheeks mostly shorter than eyes. Vertex with an arched ridge. Wings partly shaded, often banded.  
 ..... **Helionothrips Bagn.**
- 47(12) Cheeks with frill-like projections ..... **Trypactothrips Bagn.**
- 48(11) Style 1-jointed.
- 49(50) Wings with stout longitudinal veins, and with net-like sculpture ...  
 ..... **Parthenothrips Uz.**
- 50(49) Wings with one inconspicuous vein, not reticulate .....  
 ..... **Phibalothrips Hood; cf. Astrothrips Ka.**
- 51(10) Wings wanting.
- 52(53) Bristles on segment IX of abdomen short ..... **Prosopothrips Uz.**
- 53(52) Bristles on segment IX of abdomen long .....  
 ..... **Prosoponaphothrips Moul.**



- 54 (9) The four terminal antennal joints forming a pointed conical unit. Body short and stout. Fore wings with callosities ..... **Retithrips** March.
- 55 (2) Segment X of abdomen cylindrical or conical, strongly chitimized, Bristles on IX and X exceptionally stout, spine-like, often long.
- 56(57) Head and pronotum with conspicuous reticulation ..... **Dinurothrips** Hood; cf. **Tryphactothrips** Bagn.
- 57(56) At least the pronotum without polygonal reticulation.
- 58(59) Segment IX of abdomen almost cylindrical; no spines on tip of abdomen. Male with segment IX club-shaped or onion-shaped ..... **Brachyurothrips** Bagn.
- 59(58) Segments IX and X with spines.
- 60(61) Apex of antennae heliothripoid, long, hastate, joint 6 much shorter than 5. Wings with long, dark, spine-like bristles ..... **Panchaetothrips** Bagn.
- 61(60) Apex of antennae anaphothripoid, style normal, joint 6 not shorter than 5. Wings narrow, without long bristles, but surface with fine granulation ..... **Dendrothripoides** Bagn.
- 62 (1) Surface of body without distinct polygonal structure, at most mesonotum with fine net-like structure; often with anastomosing transversal lines. Antennae rarely heliothripoid.
- 63(132) Genera having appearance of *Sericothrips* or *Dendrothrips*. Body mostly short and stout, with dense rows of finest microsetulae (microtrichia) on abdomen, or abdominal segments at least laterally with transversal rows of microsetulae. Head sometimes with deepening along interior margin of eyes. Wings often with only one longitudinal vein, and in place of the lower vein only very few lower vein bristles which are sometimes very small. Antennae 7- to 9-jointed<sup>(6)</sup> (v. p. 46).
- 64(91) Maxillary palpi three-jointed.
- 65(66) Vertex near hind margin with a net-like sculptured rim, rest of head and pronotum smooth. Apical joint of style long and fine ..... cf. **Monilothrips** Moul.
- 66(65) Head smooth, or sometimes reticulate in its posterior portion, in this case also the pronotum partly, somewhat net-like transversely striate, at least at margins.
- 67(74) Hind angles of pronotum without stouter bristles.

<sup>(6)</sup> Into this section comes *Octothrips* Moul.: Sculpture and chaetotaxy as in *Enneothrips* Hood (N° 73), but antennae 8-jointed. Lower vein with regular series of bristles. Female unknown.

- 68(69) Antennae 7-jointed. Otherwise as in *Sericothrips*. ..... **Zonothrips Pries.**
- 69(68) Antennae 8- or 9- jointed.
- 70(73) Antennae 8-jointed; when 9-jointed, joint 7 more or less closely united with 6 (?).
- 71(72) Smaller forms. Wing setae weaker. Abdominal segment IX with chaetotaxy normal:- Three pairs of postero-marginal, 1 pair of dorsal bristles. Many species ..... **Scirtothrips Shull; cf. Eremiothrips Pries.; cf. Dictyothrips Uz.**
- 72(71) Larger, more convex forms. Wings with stout setae (at place of lower vein with only few setae). Bristles on IX more numerous ..... **Sericothrips Hal.**
- 73(70) Antennae 9-jointed, apical joints sharply separated from one another. Lower vein with numerous setae ..... **Enneothrips Hood**
- 74(67) Hind angles of pronotum with *one* stout bristle on either side. If two well developed bristles are present, also compare : 132.
- 75(80) Antennae 9-jointed, or joint 6 with clearly separated terminal portion.
- 76(79) Joints at tip of antennae entirely separated from one another.
- 77(78) Habitus of *Scirtothrips*. One more conspicuous bristle at posterior angles of prothorax ..... **Enneothrips subg. Enneothripiella Moul.**
- 78(77) Habitus of *Dendrothrips*. Fossil genus ..... **Praedendrothrips Pries.**
- 79(76) Joints at apex of antennae forming an entire unit ..... **Anaphothrips subg. Odontanaphothrips Moul.**
- 80(75) Antennae 7- or 8-jointed.
- a(b) Antennae 7-jointed. Two short setae at each hind angle of prothorax. Abdominal segments I-VIII with ciliary comb ..... **Dendrothripiella subg. Projectothripoides Shumsher**
- b(a) Antennae 8-jointed.
- 81(82) Joint 2 of style about 5 times as long as joint 1. .... **Dosidothrips Pries.**
- 82(81) Joint 2 of style shorter, sometimes even shorter than 1.
- 83(84) Mouth-cone very long, thin, beak-like, well surpassing base of meso-sternum, about as in *Mycterothrips* ..... **Diochaetella Pries.**
- 84(83) Mouth-cone normal.
- 85(86) Very tender form with joint one of style very long, longer than 2. Wings with stout costal vein that is fused with the upper vein for its greater part ..... **Halmathrips Hood**
- 86(85) Joint 2 of style as long as, or (in most cases) longer than, joint 1.

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(?) In this group also belongs the fossil genus *Procerothrips* Bagn.

- 87(88) Segment IX of abdomen with numerous bristles, particularly at posterior margin ..... **cf. Sericothrips Hal. (Neohydatothrips John)**
- 88(87) Segment IX of abdomen with only four to five pairs of major bristles.
- 89(90) Segment X of abdomen of female long and narrow, not forming a conical unit with IX ..... **Sericopsothrips Hood**
- 90(89) Segment X of abdomen of female normal, forming a conical unit together with IX ..... **cf. Scirtothrips Shull; cf. Exothrips Pries.**
- 91(64) Maxillary palpi two-jointed.
- 92(99) Antennae decidedly 9-jointed, joints 7 to 9 clearly separated from one another.
- 93(94) Joints 6 to 9 entirely separated from one another. Posterior angles of pronotum with at least one conspicuous bristle. Fossil genus.....  
..... **Praedendrothrips Pries.**
- 94(93) Otherwise.
- 95(96) Lower vein with numerous bristles ..... **cf. Enneothrips Hood**
- 96(95) Lower vein without or with only few weak bristles.
- 97(98) Habitus of *Sericothrips* ..... **Graphidothrips Moul.**
- 98(97) Habitus of *Scirtothrips*. Lower vein with 6-7 weak, hyaline setae...  
..... **cf. Eremiothrips Pries.**
- 99(92) Antennae 7- or 8-jointed, in the latter case joint 6 sometimes with complete or incomplete suture, thus antennae appearing indistinctly 9-jointed.
- 100(121) Prothorax at posterior angles with one or two bristles on either side; these bristles may be hyaline and only moderately long (v. p. 46).
- 101(108) Two bristles at each posterior angle of prothorax.
- 102(103) Mouth-cone very long and thin, rostriform, as in *Mycterothrips*..  
..... **cf. Dichaetella Pries.**
- 103(102) Mouth-cone normal.
- 104(105) Joint 2 of style about five times as long as joint 1. Hind tarsi normal. Body with long bristles. Tergites of abdomen medianly without approximated pair of setae ..... **cf. Docidothrips Pries.**
- 105(104) Smaller forms. Style shorter. Intermediate tergites with a pair of closely set bristles. Setae on apex of abdomen rather short.
- 106(107) Hind tarsi very long. Antennae from 8- to apparently 9-jointed .....  
..... **Pseudodendrothrips Schmutz**
- 107(106) Hind tarsi short. Antennae 7-jointed ..... **Leucothrips Reut.**
- 108(101) Posterior angles of prothorax with only one bristle.
- 109(114) Fore wings dendrothripoid, i.e., comparatively broad, inner margin straight, outer margin curved near apex. Hind tarsi always distinctly shorter than hind femora.

- 110((113) Antennae 8-jointed.
- 111(112) Fringe hairs of costa inserted somewhat below costal margin ..... **Dendrothrips subg. Monochaetella Pries.**
- 112(111) Fringe hairs of costal margin normally inserted. Lower vein wanting ..... **cf. Halmathrips Hood**
- 113(110) Antenna 7-jointed ..... **Dendrothripiella Bagn.**
- 114(109) Fore wings of other shape, not dendrothripoid.
- 115(118) Fore wings narrow, sides strongly tapering towards apex, pointed.
- 116(117) Hind tarsi very long, narrow. Joint 1 of style longer than joint 2....  
..... **cf. Pseudodendrothrips Schm.; cf. Halmathrips Hood**
- 117(116) Hind tarsi normal. Joint 1 of style shorter than 2. ....  
..... **Metaxyothrips Pries.; cf. Asprothrips Crfd.**
- 118(115) Fore wings normal.
- 119(120) Wings with one longitudinal vein. Shape of *Zonothrips*. ....  
..... **Euhydathrips Bagn.**
- 120(119) Wings with two longitudinal veins. Shape of *Scirtothrips* .....  
..... **Psilothrips Hood**
- 121(100) Prothorax without conspicuous bristles.
- 122(123) Joint 6 of antennae with transversal suture. Wings as in *Psilothrips*, but fore margin with fringe. Bristles of body hyaline .....  
..... **Eremiathrips Pries.**
- 123(122) Antennae 7- or 8- jointed, if 9-jointed, decidedly dendrothripoid.
- 124(127) Wings broad, but with apex and margins normal. Fore margin without fringe.
- 125(126) Bristles on segment X of abdomen weak ..... **cf. Psilothrips Hood**
- 126(125) Bristles on segments IX and X stout ..... **Cercyothrips Morg.**
- 127(124) Wings dendrothripoid, fore margin arched near tip, hind margin straight. Fore margin with fringe hairs.
- 128(129) Fringe originating from costal margin. Wings narrow, without markings, slightly pointed at apex. Antennae 8-jointed.....  
..... **Asprothrips J.C. Crawford.**
- 129(128) Fringe originating well within costal margin.
- 130(131) Antennae 8- or 9-jointed ..... **Dendrothrips Uz.**
- 131(130) Antennae 7-jointed ..... **Dendrothripiella Bagn.**
- 132 (63) Of varying habitus. Abdomen laterally not densely set with microtrichia. Fore wings, when fully developed, with two longitudinal veins or without veins; in the latter case with numerous bristles on place of lower vein, even if wings are sometimes very narrow, or without bristles at all. If the body is stout and heavy, the microsetulae are wanting.
- 133(466) End of abdomen of female without thick spines, only with (sometimes stout) bristles (v. p. 63).

- 134(453) Style 1- to 3-jointed, or entirely wanting. If the style is 2-jointed, it is distinctly shorter than joint 6 (v. p. 63).
- 135(136) Wings dendrothripoid, fore margin arched near apex, hind margin straight. Costal fringe originating well behind fore margin of fore wing ..... **cf. 100 and 121.**
- 136(135) Wings, if present, not dendrothripoid.
- 137(424) Mouth-cone not exceptionally long and slender, in distended specimens usually not surpassing base of prosternum. In rare cases the mouth-cone is heavy, broadly rounded apically (v. p. 62).
- 138(369) Posterior angles of prothorax with one or two conspicuous bristles (on either side); these bristles may be hyaline (v. p. 59).
- 139(146) Bristles of body strongly curved and *plumose* apically, or dilated and plumose, or postero-angular bristles of prothorax just club-shaped.
- 140(141) Two pairs of club-shaped plumose bristles on head, and two pairs of long antero-marginal bristles on prothorax ..... **Coremothrips Hood**
- 141(140) Head with only one pair of dorsal bristles, and one pair of long anterior pronotals or without them.
- 142(145) Prothorax with club-shaped antero-angular bristles.
- 143(144) Head not produced in front ..... **Rhabdothrips Hood**
- 144(143) Head distinctly produced in front ..... **Corynothrips Will.**
- 145(142) Prothorax without club-shaped antero-angulans. Hind angles with a long, clubbed bristle on either side ..... **Pteridothrips Pries.**
- 146(139) Bristles of body neither club-shaped nor plumose.
- 147(154) Surface of body with numerous, partly polygonal, anastomosing transversal lines, giving the appearance of a sort of net-like structure.
- 148(149) Fore angles of pronotum with a long bristle on either side ..... **cf. Ayyaria Karny**
- 149(148) Only posterior angles of pronotum with long bristles.
- 150(151) Large form, 3.7-4.4 mm. in length. Antennae 9-jointed. Also tergite VII with comb. Cheeks concave ..... **cf. Psectrothrips Hood**
- 151(150) Smaller forms. Antennae 8-jointed.
- 152(153) Antennae about as in *Taeniothrips*. Hind margin of tergite VIII with comb ..... **Ctenothrips Frankl.**
- 153(152) Antennae as in *Heliothrips*. Tergite VIII with hind margin simple. .... **Selenothrips Karny**
- 154(147) Without trace of a net-like structure, or this is composed of fine anastomosing transversal lines; only metascutum often with faint net-like structure.



- 155(170) Antennae 9-jointed.
- 156(157) Prothorax at posterior angles with two bristles on either side.  
Both wing veins with a full series of bristles ..... **Homothrips** Bagn.
- 157(156) Prothorax at posterior angles with only one bristle or bristles very weak.
- 158(161) Wing veins evenly set with bristles.
- 159(160) Eyes prominent, bulging. Cheeks concave. Very large form, 3.7-4.4 mm. Tergite VII with comb. Glandular areas of male square, tergite IX with a pair of spines ..... **Psectrothrips** Hood
- 160(159) Body as usual ..... **Pseudothrips** Hinds
- 161(158) Row of bristles on upper vein interrupted.
- 162(163) A comb appears on hind margin of tergites VI, VII and VIII, at least ..... **Odontanaphothrips** Moulit.
- 163(162) Segment VII and anteriors not conspicuously combed. Apex of abdomen more or less pointed, in the female.
- 164(167) Males.
- 165(166) End of abdomen with a pair of bristles of the shape of a cock's feather. Wing veins pale, but conspicuous <sup>(8)</sup>.
- 166(165) Male without such bristles but with two small spines on tergite IX. Wing veins usually little prominent ..... **Oxythrips** subg. **Protoxythrips** Pries.
- 167(164) Females.
- 168(169) Habitus of *Anaphothrips*. Forma macroptera with a pair of approximated bristles medianly on the intermediate tergites, VIII with fine comb. .... **Anaphothrips** subg. **Proscirtothrips** Karny
- 169(168) Habitus of *Oxythrips* ..... cf. 166
- 170(155) Antennae 7- or 8-jointed.
- 171(190) Fore margin of prothorax with two pairs of major bristles, one of them at fore angles; or only with one pair, i.e., at fore angles.
- 172(173) Prothorax with an additional long bristle at lateral margin. Wings with cross-bars or dark spots, and *long* bristles ..... **Scoliothrips** Hinds
- 173(172) Sides of prothorax in their middle with only weak bristles.
- 174(179) Head longer than pronotum.
- 175(176) Head nearly as broad as pronotum. Body depressed, very slender. .... cf. **Arpediothrips** Hood
- 176(175) Head longish, narrower than pronotum. Body not much depressed.
- 177(178) Fore margin of pronotum with two pairs of conspicuous bristles... **Stenchaetothrips** Bagn.

(<sup>8</sup>) A new genus that should not be described before discovery of female.



- 178(177) One pair of adpressed, fairly long antero-angular bristles. Insertions of antennae widely distant. Head large. Hind coxae far apart. Sense-cones on joints 3 and 4 not forked ..... **Iridothrips Pries.**
- 179(174) Head shorter than pronotum; if as long as it or longer, distinctly transverse.
- 180(189) Segment VIII of abdomen of male without lateral tooth-like projection. Interocellar bristles, as a rule, in front of hind ocelli.
- 181(182) Maxillary palpi 2-segmented. Wings narrow, banded, with stout bristles. Interior antero-marginal bristle of prothorax much longer than angular one ..... **Ayyaria Karny**
- 182(181) Maxillary palpi 3-segmented.
- 183(186) Fore margin of prothorax with two pairs of bristles, the angular of which being longer than the interior.
- 184(185) Eyes normal. Many species ..... **Frankliniella Karny**
- 185(184) Eyes far extended backward behind ocelli, with small facets above, but small and large facets below. Head longer ..... **Exophthalmothrips Moul.**
- 186(183) Bristles at anterior angles of prothorax shorter than interior antero-marginals.
- 187(188) Antennae stouter, style shorter. Wings more or less shaded, pale near base. Habitus of *Taeniothrips* ..... **Parafrankliniella Pries.**
- 188(187) Antennae very slender, style very thin. Wings banded. Maxillary palpi 2-segmented ..... **cf. Ayyaria Karny**
- 189(180) Segment VIII of abdomen of male with a prominent and stout tooth-like projection on either side. Interocellar setae placed within hind ocelli. Body never pale yellow ..... **Kakothrips Will.**
- 190(171) Anterior angles of prothorax without prominent bristles, but sometimes with one or several *small* bristles, at least one of which is directed forward. In some cases, fore margin with more or less conspicuous *interior* bristle.
- 191(202) Fore tibiae with one or two teeth at apex within; these teeth are minute in some cases. Sense-cone of joint 6 often stout, emerging from a very broad base.
- 192(197) Sense-cone on joint 6 issuing from broad base. Both veins of fore wing usually with an uninterrupted series of bristles, but sometimes two distal bristles somewhat separated from the rest. Antennae 8-jointed.
- 193(194) Pronotum with two pairs of major bristles at hind angles ..... **Odontothrips Serv.**
- 194(193) Pronotum with only one long bristle at posterior angles, or without major bristles.

- 195(196) Pronotum with one long bristle at hind angles. Upper vein of fore wing with regular series of bristles. Abdomen as in *Odontothrips* ..... **Odontothripiella Bagn.**
- 196(195) Pronotum without long bristles at posterior angles. Upper vein only in basal half with regular row of bristles. Abdomen strongly pointed ..... **Odontothripoides Bagn.**
- 197(192) Sense-cone on joint 6 fine, needle-shaped, though curved, never very broad at base, its basal pore small. Habitus of *Thrips* L.
- 198(199) Head distinctly produced in front. Fore tibiae at apex within, with a peculiarly shaped tooth which is fringed apically. Maxillary palpi 2-jointed. Interior bristle of postero-angulans much longer than exterior one. Antennae 8-segmented, segment 6 very slender, nearly parallel-sided, sense-cones on 3 and 4 simple. Wings strongly curved. Tergites and sternites with comb on posterior margin ..... **Organothrips Hood**
- 199(198) Head not produced in front. No comb on anterior tergites. Sense-cones forked.
- 200(201) Antennae seven-segmented ..... **Sminyothrips Uz.**
- 201(200) Antennae eight-segmented. Joint 1 very stout, 4 curved. Bristles on pronotum short. Males ..... **cf. Exothrips Pries.**
- 202(191) Fore tibiae unarmed, but sometimes fore tarsi with teeth or small hooks. Sense-cones on joint 6 normal.
- 203(328) Maxillary palpi 3-segmented (v. p. 56).
- 204(205) Antennal joint 2 with two lobular projections, bearing a seta each; joint 6 very large, oval, style very long ..... **Proectothrips Moul.**
- 205(204) Joint 2 without projections, joint 6 normal.
- 206(289) Antennae 8-jointed.
- 207(212) Wings and ocelli wanting.
- 208(211) Head not produced in front of eyes.
- 209(210) Both sexes apterous. Fore tarsi with a terminal tooth ..... **cf. Collembolothrips Pries.**
- 210(209) Female macropterous, male apterous. Fore tarsi unarmed ..... **cf. Amblythrips Bagn.**
- 211(208) Head distinctly produced in front of eyes ... **cf. Chirothrips Hal.**
- 212(207) Wings well developed or reduced. (De-alated specimens have conspicuous ocelli).
- 213(214) Antennal joint 2 barrel-shaped or almost cylindrical, not constricted at base. Sense-cones on joints 3 and 4 not forked in the brachypterous form, on 4 forked in the macropterous form. Abdomen with some *very* stout, spine-like bristles at apex. Exterior postero-marginal bristle of prothorax much shorter than interior one ..... **Idolimothrips Pries.**

- 214(213) Antennal 2 normal, cyathiform or nearly globular. Apex of abdomen not spiny, though bristles may be stout.
- 215(258) Posterior angles of prothorax with two stout bristles on either side; these bristles are about equal in length.
- 216(217) Lower vein bristles exceptionally long. One pair of postoculars.....  
..... **cf. Megaphysothrips Ram. and Marg.**
- 217(216) Lower vein bristles not exceptionally long or wings reduced.
- 218(255) Antennae of about equal form in both sexes.
- 219(220) Male with tridentate dorsal projection on tergite IX of abdomen.  
Both sexes with very long forked trichomes of antennae .....  
..... **Plutonothrips Pries.**
- 220(219) Male without this peculiar character, in some cases with (up to six) spines on tergite IX.
- 221(222) Vertex with two very long postocular bristles on either side. Lower vein with few bristles ..... **Euphysothrips Bagn.**
- 222(221) Head with at most one long postocular pair of bristles, or only with the normal series of very small postoculars.
- 223(244) A bristleless interval in the series of upper vein bristles of fore wing.
- 224(237) Sense-cones on joints 3 and 4 forked.
- 225(226) Upper vein of fore wing connected with costal margin by a cross-vein. Apex of abdomen as in *Oxythrips*. Interval of upper vein bristles small. Male with a pair of spines on tergite IX, as in many species of *Anaphothrips* ..... **Synaptothrips Tryb.**
- 226(225) Not the above characters combined.
- 227(228) Head narrow, produced in front, eyes flat, cheeks short. Antennae stout, joint 2 usually produced exteriorly. Fore legs enlarged, femora often with a hook-like exterior apical angle. Body somewhat depressed. Many species ..... **Chirothrips Hal.**
- 228(227) Not the above characters combined.
- 229(234) Habitus of *Anaphothrips*. Bristles on posterior angles of prothorax short or not very stout, bristles on wing veins sometimes weak.
- 230(231) Lower vein with numerous bristles. Male with six spines on tergite IX. .... **Taeniothrips subg. Lefroythrips Pries.**
- 231(230) Lower vein with four bristles at the most.
- 232(233) Wings narrow, banded. Sense-cones long .....  
..... **Chaetanaphothrips Pries.**
- 233(232) Wings broad, inclusive of bristles colourless, veins very conspicuous, fringe hairs distinctly undulated .....  
..... **Anaphothrips subg. Hyalopterothrips Pries.; cf. Scirtothrips Shull.**

- 234(229) Not showing habitus of *Anaphothrips*. Bristles on prothorax usually very well developed, bristles on wing veins as well.
- 235(236) Male apterous and without ocelli. Head small. Antennae short ...  
..... **Amblythrips Bagn.**
- 236(235) Male macropterous or brachypterous. Ocelli developed. Many species ..... **Taeniothrips Serv. (9).**
- 237(224) Sense-cones simple, not forked, seldom on joint 4 forked.
- 238(243) Head very broad and large or normal.
- 239(240) Insertions of antennae comparatively far apart. Anterior angle of pronotum with long, though adpressed, bristle. Head large .....  
..... **cf. Iridothrips Pries.**
- 240(239) Distance of antennal insertions small. Anterior angles of pronotum with short, forwardly directed bristle; sometimes interior antero-marginal bristle rather long.
- 241(242) Tergites III to VIII of abdomen with comb at posterior margin, about as in *Odontanaphothrips*, and with microtrichia on lateral part of tergites. Head not broader than long. Habitus of *Stenothrips* ..... **Monothrips Moul.**
- 242(241) Tergites III to VII without comb of fine teeth .....  
..... **Bregmatothrips Hood; cf. Anaphothrips. subg. Thermothrips Pel.**
- 243(238) Head narrow, eyes flat ..... **cf. Chirothrips Hal.**
- 244(223) Series of bristles of upper vein regular, uninterrupted, or there is only a small interval after the four basal bristles.
- 245(246) Head very large. Exterior postocular bristle very long, interior vestigial. Habitus of *Baliothrips* ..... **Parabaliethrips Pries.**
- 246(245) Head normal or small.
- 247(248) Habitus of *Mycterothrips*, but mouth-cone normal <sup>(10)</sup>.
- 248(247) Habitus of *Taeniothrips*. Head normal. No exceptionally long postocular bristles.
- 249(250) Base of joints 4 and 5 of antennae somewhat separated from the remaining portion, forming a small ring. Tergite VIII without comb. Head somewhat produced, eyes protruding.....  
..... **Taeniothrips subg. Oricothrips Tryb.**
- 250(249) Antennal joints 4 and 5 without ringlet, or at least not the above characters combined.
- 251(252) Pronotum with very fine and densely set transversal lines.....  
..... **Isochaetothrips Moul.**

(9) *Ramakrishnothrips* Shumsher comes in here, differing from *Taeniothrips* in having a distinct process in front of eyes.

(10) A new genus from South Africa, to be described by Prof. J. C. Faure.

- 252(251) Pronotum with the normal anastomosing transversal lines which are not so densely arranged and usually not very conspicuous.
- 253(254) The forked sense-cones unusually long, on joint 4 nearly reaching apex of antennae. Males ..... **Taeniothrips subg. Acremonothrips Pries.**
- 254(253) Sense-cones also in the male normal. .... **cf. Taeniothrips Serv.**
- 255(218) Antennal joint 6 of male long, bacilliform; style joints very small or wanting.
- 256(257) Mouth-cone, though narrow, not surpassing base of prosternum... ..... **Rhopalandrothrips Pries.**
- 257(256) Mouth-cone longer, slenderer ..... **cf. Mycetothrips Tryb.; cf. 441**
- 258(215) Posterior angles of prothorax with *one* stout bristle, or any other bristle near it is much smaller.
- 259(260) Lower vein bristles exceptionally long, about 200  $\mu$ . One pair of long postocular bristles ..... **Megaphysothrips Ram. and Marg.**
- 260(259) Lower vein bristles normal, or wings reduced.
- 261(262) Antennae inserted on under side of head, the latter very short. Mouth-cone very long ..... **cf. Chilothrips Hood**
- 262(261) Antennae inserted normally.
- 263(264) Body narrow, pale, with large head (as large as prothorax), and with stout mouth-cone. Eyes convex. Interantennal projection low (short) ..... **cf. Arpediothrips Hood; cf. Oxythrips Uz.**
- 264(263) Head smaller than prothorax, if large, only one pair of interior postero-marginal prothoracic bristles present.
- 265(268) Segment IX and X of abdomen combined longer than head and prothorax together.
- 266(267) Abdominal segment X long, tubiform, like the beak of a snipe. Fore tarsi with double tooth. Sternites III to VI of *female* with pale areas ..... **Macrurothrips Vuill.**
- 267(266) Abdominal segments IX and X together conical. Tarsi unarmed. Head not produced on front ..... **cf. Taeniothrips Serv.**
- 268(265) Segments IX and X of abdomen normal, or X tubiform, in this case, however, shorter than head and prothorax together.
- 269(270) Abdomen broad, apical bristles stout, b. 1 on IX shorter than b. 2. Antennal joints 4 to 6 somewhat pedicellate at base, style slender; sense-cones on 3 and 4 slender, forked. Body strongly chitinated, usually brachypterous. Head somewhat constricted behind eyes, widened towards base. Posterior angles of prothorax with *one* moderately long, and one much shorter bristle .... **Tmetothrips Serv.**
- 270(269) Not the above characters combined.
- 271(276) Upper vein of fore wings with an uninterrupted series of bristles.



- 272(275) Posterior angles of prothorax with one long bristle, or with one long and one short bristle.
- 273(274) Antennal joint 6 divided by a pre-apical circular suture. Fore tarsi unarmed. Median dorsal bristles of tergites closely approximated.  
..... **Pseudothrips Hinds**
- 274(273) Antennal joint 6 not divided.
- a(b) Fore tarsi at apex of joint 1 with tooth. Apex of enlarged fore femora somewhat turned up exteriorly. Median dorsal bristles of tergites far apart from each other .....  
..... **Oxythrips subg. Pseudoxythrips Pries.**
- b(a) Fore tarsi simple, fore femora not turned up at apex. (Position of tergite bristles unknown). .....  
..... **Pseudothrips subg. Glaucothrips Karny.**
- 275(272) Posterior angles of prothorax with two long bristles each .....  
..... **cf. Isochaethrips Moul.**
- 276(271) Upper vein with interval in the series of bristles.
- a(b) Head longer than broad at base, produced in front into a short projection, the latter half as long as broad at base .....  
..... **Neocorynthrips Ram. & Marg.**
- b(a) Head not or scarcely produced in front.
- 277(280) Sense-cones on bottle-shaped joints 3 and 4 very long. Prothorax with one pair of long bristles at each posterior angle.
- 278(279) Wings banded. Body dark brown and yellow. Interocellar setae long.  
..... **Dichromothrips Pries.**
- 279(278) Wings not banded. Body unicolorous. Interocellar bristles shorter  
..... **Taeniothrips subg. Eugeneothrips Hood**
- 280(277) Sense-cones shorter, if very fine, the pronotal bristles very short.
- 281(282) Tergite IX of male with sickle-shaped bristles. Tender, yellow forms. Pronotum, as a rule, with an exceedingly fine structure of transversal lines ..... **Scirtothrips Shull**
- 282(281) Tergite IX of male usually with spines or other chitinous projections, or simple, with bristles only.
- 283(284) Wings banded. Two pairs of short, pale bristles on posterior angles of prothorax ..... **cf. Chaetanaphothrips Pries.**
- 284(283) One long or moderately long bristle at each posterior angle of prothorax. Apex of abdomen often pointed, sometimes segment X tubiform.
- 285(286) Medio-dorsal bristles on segment IX very weak. Lower vein with regular series of bristles. Wings normal. Many species .....  
..... **Oxythrips Uz.**



- 286(285) Medio-dorsal bristles on tergite IX conspicuous. Wings very narrow or broadly ensiform, lower vein with only few bristles.
- 287(288) Head small, antennae comparatively short and stout, style short. Sense-cones on joints 3 and 4 forked ..... **Exothrips Pries.**
- 288(287) Head large. Antennal segment 6 and style long and slender. Sense-cone on 3 simple, on 4 forked. Prothorax at hind margin with only one pair of bristles .... **Anaphothrips subg. Thermothrips Pel.**
- 289(206) Antennae 7-jointed.
- 290(295) Eyes very large, strongly convex, bulging.
- 291(292) Fore tarsi with two teeth. Veins of fore wing with an uninterrupted series of bristles ..... **Peladothrips Pries.**
- 292(291) Fore tarsi unarmed.
- 293(294) Antennae very long and slender. Two pairs of lateral ante-ocular bristles. Body slender ..... **Mecothrips Karny**
- 294(293) Antennae stout ..... **Baliothrips Uz.**
- 295(290) Eyes normal.
- 296(297) Head triangularly produced in front. Ovipositor reduced. Antennae dimorphous, male with joints 5 and 6 club-shaped ..... **Plesiothrips Hood**
- 297(296) Head not or very slightly produced in front, in the latter case antennae not dimorphous.
- 298(303) Both wing veins evenly set with bristles.
- 299(300) Scale of wing with six small bristles at alar suture (beside double seta at apex). Bristles on wing veins small, stout, *densely set.* Style short ..... **Isoneurothrips Bagn.**
- 300(299) Scale with five bristles at alar suture. Wing bristles normal.
- 301(302) Fore tarsi unarmed.
- a(b) Head not produced ..... **Thrips L. subgen. Isothrips Pries.**
- b(a) Head rounded in front, medianly extending cephalad of eyes, overhanging bases of antennae ..... **Bolbothrips J.C. Crawford.**
- 302(301) Fore tarsi with two small teeth at apex of first joint within ..... **cf. Peladothrips Pries.**
- 303(298) Series of upper vein bristles interrupted.
- 304(305) Prothorax in the middle of lateral margin with a conspicuous bristle ..... **Euchaetothrips Bagn**
- 305(304) Prothorax only at posterior angles with conspicuous bristles.
- 306(309) Not only tergite VIII but also some anterior tergites with postero-marginal comb.
- 307(308) Hairs (teeth) of comb long. Eyes much shorter than cheeks. Ocelli placed at angles of a rectangular triangle. Fore femora of male enlarged ..... **Fulmekiola Karny**
- 308(307) Teeth of postero-marginal combs short. Head short, small, cheeks

- shorter. Ocellar triangle acute. Fore femora of male normal .....  
 ..... **Microcephalothrips Bagn.**
- 309(306) At most tergite VIII of abdomen with marginal comb.
- 310(323) Posterior angles of prothorax on either side with a pair of bristles  
 of about equal length.
- 311(312) Body black and orange, *broad*. Apterous or macropterous .....  
 ..... **cf. Platythrips Uz.**
- 312(311) Body normal or slender.
- 313(314) Sense-cones simple. Two pairs of postocellar bristles, one behind the  
 other. Ocelli small. Body slender ..... **Bolacothrips Uz.**
- 314(313) Sense-cones forked.
- 315(322) Ocelli more or less well developed in both sexes. Wings of male  
 fully developed or reduced.
- 316(317) Sense-cones exceptionally long and slender, those of joint 4 attain-  
 ing nearly apex of antenna. Male .....  
 ..... **Taeniothrips subg. Acremonothrips Pries.**
- 317(316) Sense-cones not unusually long and slender, antennae therefore not  
 antler-shaped.
- 318(321) Head not produced in front. Sense-cones normal. Ante-ocellar bris-  
 tles small.
- 319(320) Abdomen without microtrichia .....  
 ..... **Thrips L. (cf. Mycterothrips, males)**
- 320(319) Abdomen with microtrichia <sup>(11)</sup>.
- 321(318) Head convex in front, eyes bulging. Ante-ocellar bristles (two pairs)  
 very long. Sense-cones long, fine ..... **Mecothrips Karny**
- 322(315) Ocelli wanting in the male sex. Head broadly rounded in front.  
 Wings sickle-shaped in the female, wanting in the male. Habitus  
 of *Baliothrips* ..... **Toxonothrips Moul.**
- 323(310) Exterior postero-angular bristle of prothorax not even half the  
 length of the interior one, stout or minute.
- 324(325) Antennal joint 2 barrel-shaped, not constricted at base. Apex of  
 abdomen with weak *spines*. Sense-cone on joint 3 and 4 simple in  
 the brachypterous form, on 4 forked in the macropterous form .....  
 ..... **cf. Idolimothrips Pries.**
- 325(324) Second antennal joint normal. Apex of abdomen with bristles.
- 326(327) Antennae stout. Head strongly transverse .....  
 ..... **Thrips subg. Epithrips Pries.**
- 327(326) Antennae slender. Head longer .....  
 ..... **cf. Bolacothrips Uz.; Bolacidothrips Pries.**

(<sup>11</sup>) New genus from South Africa, to be described by Prof. J. C. Faure.

- 328(203) Maxillary palpi 2-segmented.
- 329(330) Wings and ocelli wanting.
- a(b) Fore tarsi armed with small tooth. Very slender forms. .... **Collemboothrips Pries.**
- b(a) Fore tarsi unarmed. Very broad and heavy forms. Bicoloured. .... **Platythrips Uz.**
- 330(329) Wings and ocelli developed at least in female, the former sometimes reduced.
- 331(352) Antennae 8-segmented.
- 332(333) Antennal joint 2 with a short, tooth-like projection within ..... **Dentothrips Faure.**
- 333(332) Antennal joint 2 simple.
- 334(337) At least one of the antero-marginal bristles of prothorax very long.
- 335(336) Tergites of abdomen partly reticulated. Wings banded. Bristles on lower vein scarce, upper vein fused with costa. Segment IX of abdomen elongate conical ..... **Ayyaria Karny**
- 336(335) Body without reticulation. Wings not banded. Lower vein with numerous bristles. Joint 6 of antenna with an elongate sensory area, beginning before middle and nearly attaining apex of joint.... **Smeringothrips Pries.**
- 337(334) No prominent antero-marginal prothoracic bristles.
- 338(345) Antennae very slender. Fore tarsi unarmed. Body normal or slender.
- 339(342) Head not produced anteriorly.
- 340(341) Sense-cones forked ..... **Diarthrothrips Will.**
- 341(340) Sense-cones on 3 simple on 4 forked. Head large. Habitus of *Anaphothrips* ..... **cf. Anaphothrips subg. Thermothrips Pel.**
- 342(339) Head produced into a short process.
- 343(344) Body unicolorous. Male with a gazelle-horn-shaped process on tergite IX. .... **Dorcadothrips Pries.**
- 344(343) Body bicolorous, longitudinally or otherwise. Wing veins vestigial. Male without peculiar appendices ..... **Trichromothrips Pries.**
- 345(338) Antennae stouter, only the style may be slender.
- 346(347) Fore tarsi with two teeth, one at apex of tarsus, the other at the end of tarsal joint 1. Body very slender, head longish ..... **Sitothrips Pries.**
- 347(346) Fore tarsi unarmed.
- 348(349) Head large. Tergites without comb. Pronotum with only one pair of setae at posterior margin ..... **Anaphothrips subg. Thermothrips Pel.**
- 349(348) Head small or normal.
- a(b) Habitus of *Limothrips*, female macropterous with ocelli, male apterous without ocelli. Head produced into a four-tipped process

- in front. Antennae with simple sense-cones. Mouth-cone narrow.  
 Female with conical apex of abdomen .....  
 ..... **Limothrips subg. Neolimothrips Shumsh.**
- b(a) Not the above characters combined (see 350).
- 350(351) Habitus of *Taeniothrips* or *Stenothrips*.  
 c(d) Sense-cones on segments 3 and 4 simple. Eyes large, protruding.  
 Tergites III to VIII with a row of small, irregular teeth; with  
 microtrichia at the sides. (Number of palpal joints not stated) .....  
 ..... **cf. Monothrips Moulit.**
- d(c) Sense-cones forked. Eyes slightly projecting, but not prominent.  
 Tergites I to VII with a complete, though sparse fringe of teeth  
 on hind border. Habitus of *Diarthrothrips* Will. ....  
 ..... **Gnomonothrips Ram. and Marg.**
- 351(350) Habitus dendrothripoid .....  
 ..... **cf. Metaxyothrips Pr.; cf. Pseudodendrothrips Schmutz.**
- 352(351) Antennae 7- or 6-segmented.
- 353(366) Antennae 7-segmented.
- 354(365) Longitudinal veins of fore wing distinctly separated.
- 355(356) Eyes bulging, with coarse facets ..... **cf. Baliothrips Uz.**
- 356(355) Eyes normal.
- 357(362) Antennae stout or moderately slender. Fore margin of pronotum  
 without conspicuous bristles.
- 358(359) Antennal joints 5 and 6 united, i.e., 5 broad at apex, 6 broad at  
 base. Wings banded ..... **Baliothrips Uz.**
- 359(358) Antennal joint 6 narrower at base. Head longish. Wings not band-  
 ed.
- 360(361) One pair of setae behind posterior ocelli. Style long, slender.  
 Segment IX of abdomen long. Tarsi short ..... **Poëthrips Faure**
- 361(360) Two pairs of setae behind posterior ocelli, viz., one pair of cephalic  
 setae besides postocular series of fine setae. Body very slender.  
 Segment IX of abdomen moderately long ..... **Stenothrips Uz.**
- 362(357) Antennae slender or very slender.
- 363(364) Fore margin of prothorax usually with very long interior bristle.  
 Sense-cones not forked. Wings banded. Two cephalic bristles on  
 vertex ..... **Bolacidothrips Pries.**
- 364(363) Fore margin of prothorax without long bristles. Antennal joints  
 6 and 7 cylindrical, 7 about as long as 5. Antennae of male as in  
*Rhopalandrothrips* ..... **Sorghothrips Pries.**
- 365(354) Longitudinal veins of fore wing united, about from their origins  
 to their tips. Very small, yellow forms. Prothoracic bristles mode-  
 rately long, weak ..... **Leucothrips Reut.**
- 366(353) Antennae 6-segmented.

- 367(368) Joint 6 of antennae very long, bacilliform, Males .....  
 ..... **cf. Rhopalandrothrips Pries.**
- 368(367) Joint 6 of antennae, though elongate, not bacilliform. Body with  
 microtrichia. Lower vein with only few setae. Habitus of *Scirto-*  
*thrips* ..... **Drepanothrips Uz.**
- 369(138) Posterior angles of prothorax without prominent bristles.
- 370(373) Antennae heliothripoid. Body with dark, rigid bristles.
- 371(372) Lower vein densely set with setae, costa with dark, rigid bristles.  
 Segment IX of abdomen broad .....  
 ..... **Selenothrips subg. Xestothrips Pries.**
- 372(371) Lower vein very scarcely set with setae, costa with long, hair-like  
 setae. Segment IX narrow, almost cylindrical .....  
 ..... **cf. Brachyurothrips Bagn.**
- 373(370) Antennae not heliothripoid.
- 374(375) Eyes occupying the whole sides of the head (fossil) .....  
 ..... **Amorphothrips Bagn.**
- 375(374) Eyes smaller.
- 376(415) Ocelli normally developed, their corneae conspicuous (v. p. 61).
- 377(378) Head much produced in front, narrowed anteriorly, depressed. An-  
 terior part of body and eyes flat, cheeks short. Antennae stout,  
 joint 2 often produced exteriorly ..... **cf. Chirothrips Hal.**
- 378(377) Not the above characters combined.
- 379(380) Apex of abdomen spiny. Segment X nearly tubiform. Antennae 8-  
 segmented. Fossil genus ..... **Procerothrips Bagn.**
- 380(379) Abdomen not spiny but often with stout bristles on segments IX  
 and X; in cases of doubt, antennae 9-jointed.
- 381(382) Head large, mouth-cone large, rounded at apex. Head larger than  
 prothorax, as large as pterothorax. Wings often reduced .....  
 ..... **cf. Arpediothrips Hood; cf. Anaphothrips Uz.**
- 382(381) Head and mouth-cone smaller.
- 383(410) Fore wings with two, though sometimes not very conspicuous, lon-  
 gitudinal veins, with more or less numerous setae, or longitudinal  
 veins fused to one single vein and bristles on veins conspicuous <sup>(12)</sup>.
- 384(405) Maxillary palpi 3-segmented.
- 385(392) Antennae decidedly 9-jointed, or joint 6 with transversal suture.
- 386(387) Joint 6 divided by an incomplete suture .....  
 ..... **Anaphothrips Uz. subg. Anaphothrips s.str.**
- 387(386) Joint 6 fully separated from 7, though sometimes closely attached

<sup>(12)</sup> In this section also belongs the fossil genus *Telothrips* Pries.: Joints 7 to 9 are well separated from 6, the latter being large and stout. Prothorax broadest in anterior third, whence it is much narrowed posteriorly, being cordiform as a whole.



- 388(391) Joint 7 broadly attached to 6, not longer than broad. Pronotum without conspicuous transversal lines. Intermediate tergites without approximated pair of dorsal bristles.
- 389(390) Habitus of *Scirtothrips* ..... cf. *Eremiuthrips* Pr.
- 390(389) Habitus of *Anaphothrips*. Male with a pair of spines on segment IX. Sense-cones on joint 3 and 4 forked.
- a(b) A complete, though irregular series of bristles on upper vein. Comb on tergite VIII regular. Male with peculiarly shaped glandular areas (double-walled, transversally T-shaped, with irregular bands instead of micro-pores); tergites IX and X of male with spines and with two converging processes that are horse-shoe-shaped, as a whole. .... **Othinanaphothrips J.C. Crawford.**
- b(a) Series of upper vein bristles interrupted. Abdomen of male normal, as in *Anaphothrips* s.str. .... **Anaphothrips subg. Hemianaphothrips Pries.**
- 391(388) Joint 7 sharply separated from 6, very fine. Pronotum very conspicuously transversally striate. Tergites II to VIII with a pair of approximated medio-dorsal bristles ..... **Enneothrips Hood**
- 392(385) Antennae 7- or 8-jointed.
- 393(402) Antennae 8-jointed.
- a(b) Fore tibiae with a tooth at apex within, more developed in male, less in female .... **Anaphothrips Uz. subg. Dantabahuthrips Shumsher**
- b(a) Fore tibiae unarmed (see 394).
- 394(401) Posterior margins of sternites of abdomen with three pairs of bristles.
- 395(396) Both wing veins with conspicuous bristles throughout ..... **Pseudanaphothrips Karny (for Pseudothrips achaetus Bagn.)**
- 396(395) Upper vein with interval. Bristles tender.
- 397(400) Prothorax, metathorax and sides of abdominal tergites somewhat reticulate, or at least legs with net-like structure.
- 398(399) Bristles at apex of abdomen long. Pronotum with subbasal transversal furrow. Joint 4 long, vasiform ..... **Amphorohtrips Pries.**
- 399(398) Bristles on apex of abdomen moderately long. Pronotum without furrow. Joint 4 normal; antennal joints with transversal annulation ..... cf. **Dictyothrips Uz.**
- 400(397) Surface not reticulate .... **Anaphothrips subg. Neophysopus Schmutz;**  
..... cf. **Scirtothrips; cf. Exothrips**
- 401(394) Posterior margins of sternites with five pairs of bristles ..... cf. **Synaptothrips Tryb.**
- 402(393) Antennae 7-jointed.
- 403(404) Posterior margin of sternites with the normal three pairs of bristles. .... **Thrips subg. Athrips Pries.**



- 404(403) Posterior margins of sternites with at least six pairs of bristles.  
..... **Ramaswamiahiella Karny**
- 405(384) Maxillary palpi 2-segmented. Wings sometimes very broad, with  
conspicuous veins.
- 406(409) Wings broad.
- 407(408) Antennae 9-segmented ..... **cf. Eremiothrips Pries.**
- 408(407) Antennae 8-segmented .....  
..... **cf. Psilothrips Hood; cf. Gercythrips Morg.**
- 409(406) Wings narrow. Antennae 7-segmented ..... **cf. Leucothrips Reut.**
- 410(383) Fore wings without longitudinal veins, wing surface without cons-  
picious setae, the latter scarcely larger than the microtrichia of the  
wings.
- 411(412) Maxillary palpi short, 2 segmented. Joint 2 of style somewhat  
longer than 1. Surface without reticulation .....  
..... **Asprothrips J.C. Crawford.**
- 412(411) Maxillary palpi 3-segmented, long.
- 413(414) Head with transversal furrow. Wings very narrow, banded, sur-  
face granulated. Sides of abdomen with conspicuous microtrichia.  
Segment X of abdomen split above ..... **cf. Dendrothripoides Bagn.**
- 414(413) Head without transversal impression. Wings normal, without gra-  
nulation. Microsetulae of abdomen inconspicuous. Antennae very  
short, stout. Joint 1 of maxillary palpi short. Segment X not split.  
..... **Aneurothrips Karny**
- 415(376) Ocelli and wings reduced or entirely wanting.
- 416(419) Sense-cones forked.
- 417(418) Head broader than long ..... **Agerothrips Tryb.**
- 418(417) Head elongate ..... **cf. Anaphothrips Uz.**
- 419(416) Sense-cones simple <sup>(13)</sup>.
- 420(421) Dorsal bristles of segment IX of abdomen fine. Body very slender.  
Head longer than broad ..... **Aptinothrips Hal.**
- 421(420) Dorsal bristles of segment IX stout. Head moderately elongate  
not longer than broad.
- 422(423) Antennal joint 6 not divided. Eyes bulging. Cheeks narrower,  
straight. Sides of pronotum straight, converging anteriorly .....  
..... **Caprithrips Faure**
- 423(422) Antennal joint 6 with a transversal suture. Cheeks convex. Sides  
of prothorax rounded ..... **Anaphothrips subg. Apterothrips Bagn.**  
..... **(typ. subg. Anaphothrips secticornis Tryb.)**

(<sup>13</sup>) **cf. males of Chirothrips Hal.**

- 424(137) Mouth-cone very long or very narrow, often well surpassing base of mesosternum, as a whole, pointed. Head small.
- 425(428) Antennae 9-jointed.
- 426(427) Posterior angles of prothorax with short and weak bristles ..... **Rhamphothrips Karny**
- 427(426) Posterior angles of prothorax with a pair of conspicuous bristles, on either side. Both veins of wings evenly set with bristles ..... **Homothrips Bagn.**
- 428(425) Antennae 7- or 8-jointed.
- 429(452) Antennae 8-jointed.
- 430(431) Fore femora within with a series of small teeth, strongly enlarged. Fore tibiae with a long, curved hook. Tergites of male simple. Prothorax at hind angles with a longer and a shorter bristle on either side ..... **Pyclothrips Pries.**
- 431(430) Fore femora not or little enlarged, without series of teeth.
- 432(445) Posterior angles of prothorax with two stout bristles on either side. These bristles are usually long, rarely short and club-shaped.
- 433(434) Joint 2 of antennae with a short spine-like projection within ..... **Dentothrips Faure**
- 434(433) Joint 2 unarmed.
- 435(436) Joint 3 of antennae very small. Major body bristles dilated at apex. Eyes bulging. Wings wanting ..... **Kurtomathrips Moul.**
- 436(435) Third antennal normal. Wings developed.
- 437(444) Major bristles of body pointed.
- 438(439) Fore margin of head with two excavations as in *Dendrothrips*. The two approximate bristles in the middle of the tergites, and the stout ones on the hind tarsi are further dendrothripoid characters ..... **cf. Dictyaella Pries.**
- 439(438) Head normal, not dendrothripoid.
- 440(443) Body without microtrichia.
- 441(442) Upper vein with a nearly complete series of bristles <sup>(14)</sup>.
- 442(441) Series of upper vein bristles broadly interrupted ..... **Myeterothrips Tryb.**
- 443(440) Abdomen with microtrichia.
- 444(437) Postero-angular bristles of prothorax dilated towards tip. Style very long. Tergite I with stout comb ..... **Salpingothrips Hood**
- 445(432) Posterior angles of prothorax at most with one bristle on either side. Prothorax often very long. Head comparatively small.
- 446(451) One bristle at each hind angle of prothorax.

(14) Nov. gen. from South Africa, to be described by Prof. J. C. Faure.

- 447(450) Wings narrow, lower vein with few bristles. Head small.
- 448(449) Fore tibiae produced at apex within into a more or less conspicuous tooth. Abdominal segments of male with comb. Rostrum longer...  
..... **Perisothrips Hood (s.str.)**
- 449(448) Fore tibiae unarmed. Tergites of male not combed. Rostrum somewhat shorter ..... **Perisothrips subg. Bdalsidothrips Pries.**
- 450(447) Wings comparatively broad, lower vein with numerous bristles. Rostrum heavy, sides scarcely convex ..... **Chilothrips Hood; cf. Oxythrips Uz.**
- 451(446) Postero-angular bristles of prothorax wanting. Head small ..... **Rhinothrips Faure**
- 452(429) Antennae 7-jointed. Habitus of *Thrips* L. ....  
..... **Thrips subg. Oxyrrhinothrips Pries.; cf. Mycterothrips Tryb., males.**
- 453(134) The two-segmented style longer than joint 6 or at least not shorter.
- 454(457) Prothorax without bristles at posterior angles.
- 455(456) Antennae very stout. Head very small, mouth-cone very long.....  
..... **cf. Rhinothrips Faure**
- 456(455) Antennae slender, head and mouth-cone normal ..... **Belothrips Hal.**
- 457(454) Prothorax at posterior angles with two to three conspicuous bristles on either side.
- 458(459) Three bristles at each posterior angle of prothorax. Joint 2 of style much longer than 1, style as in *Docidothrips*. Veins of fore wing with bristles throughout their length .....  
..... **Docidothrips subg. Stulothrips Moul.**
- 459(458) Two bristles at each hind angle of prothorax, one of them sometimes shorter than the other.
- 460(461) Antennal joints 5 and 6 broadly united, forming one unit. Eyes finely faceted. Large forms ..... **Rhaphidothrips Uz.**
- 461(460) Joints 5 and 6 not forming one unit.
- 462(463) Eyes finely faceted. Small form, suggesting *Dendrothrips* .....  
..... **cf. Metaxyothrips Pries.**
- 463(462) Eyes normally or coarsely faceted
- 464(465) Eyes very coarsely faceted. Joint 2 of style evenly pointed towards apex, much finer than joint 1. Antennal 5 longer than 6 and well separated from it. (Fossil) ..... **Lipsanothrips Pries.**
- 465(464) Eyes normal, joint 2 of style thinner than 1 but elongate fusiform, rather than subuliform. Joint 6 much longer and broader than 5.  
..... **cf. Docidothrips Pries.**
- 466(133) Segment X of abdomen of female with two stout, short spines above, sometimes segments VIII and IX too with spines. In *Idolimoethrips*, the spines are weaker and longer (when there are long abdominal spines, and the antennae heliothripoid, compare : 55).

- 467(468) Pronotum without postero-angular bristles .....  
 ..... **cf. Dendrothripoides Bagn.; cf. Procerothrips Bagn. (fossil).**
- 468(467) Pronotum with one or two bristles on each posterior angle.
- 469(470) Joint 2 of antennae barrel-shaped, not constricted at base. Sense-cones of joint 3 and 4 simple in the brachypterous form; the macropterous form has sense-cones on 3 simple, on 4 forked (with pedicel). Prothorax with exterior postero-angular bristle shorter, interior one longer ..... **Idolimoithrips Pries.**
- 470(469) Joint 2 constricted at base, cup-shaped, as usual. Prothorax with one or two pairs of postero-angulars.
- 471(472) Prothorax with only one pair of conspicuous postero-angular bristles. Head distinctly produced in front, narrowed anteriorly. Joint two or three of antennae often produced at apex without .....  
 ..... **Limothrips Hal.**
- a(b) Sense-cones on joints 3 and 4 simple. Eyes more convex .....  
 ..... **Subg. Limothrips s.str.**
- b(a) Sense-cones on joints 3 and 4 forked. Eyes less protruding .....  
 ..... **Subg. Pruthiella Shumsh.**
- 472(471) Prothorax with two pairs of postero-angulars.
- 473(474) Head produced in front. Upper vein with four basal and one apical bristles. Cheeks narrowed posteriorly .....  
 ..... **Bregmatothrips Hood and Will.**
- 474(473) Head not produced in front. Habitus of *Taeniothrips*. Both wing veins evenly set with bristles ..... **Limphysothrips Bagn.**

Note: Not included is the genus *Calothrips* Oust., as its position is uncertain.

### Subordo Tubulifera

#### Familia Phlaeothripidae

- 1 (4) Abdomen with a pair of dorsal sutures, parallel to lateral margins, but within the larger bristles. Wings very weak and narrow, sparingly fringed. Body very small, chirothripoid (*Hyidiothripinae*).
- 2 (3) Antennae 7- (rarely 8-) jointed, joints 6 and 7 forming a true style. Antero-marginal prothoracic bristles large, moved posteriorly well onto disc of pronotum. Body less slender ..... **Hyidiothrips Hood**
- 3 (2) Antennae 8-jointed, 7 and 8 together not forming a style. Antero-marginal prothoracic bristles smaller, all situated in the same transversal line. Body more slender ..... **Preeriella Hood**
- 4 (1) Abdomen normal, without such sutures. Body seldom *Chirothrips*-like.

- 5 (6) Abdominal segment X not tubiform, convex, parabolical in outline. Tergites II to IX almost linear, strongly transverse. (*Pygothripinae*).  
..... **Pygothrips Hood**
- 6 (5) Tenth abdominal segment distinctly tubiform, often conical, not parabolical in outline, seldom mushroom-shaped.
- 7(921) Tube much shorter than the remaining abdominal segments together (v. p. 112).
- 8(23) Distance of hind coxae greater than that separating either of the other coxae. Anal hairs exceptionally long, several times as long as tube. Wings wanting. Surface of body, at least of head, roughened with small tubercles. (*Urothripinae*).
- 9(10) Head strongly conically produced far distad of eyes and insertion of antennae ..... **Conocephalothrips Bianchi**
- 10 (9) Head normal.
- 11(12) Antennae 8-segmented, but joints 6, 7 and 8 united, and separated by a more or less complete suture. Posterior angles of prothorax produced. Hind coxae little more distant from each other than middle coxae ..... **Octurothrips Pries.**
- 12(11) Antennae 4- to 7-segmented.
- 13(16) Antennae 7-segmented.
- 14(15) Head without prominent dorsal bristles. Antennal joints 3-5 about as long as broad. Tube much shorter than head, three to five times as long as greatest width, with six anal setae ..... **Urothrips Bagn.**
- 15(14) Head with one to three pairs of prominent dorsal bristles. Tube much longer than head, ten times as long as wide or more elongate, with four long anal setae.
- a(b) Head with one pair of prominent dorsal bristles. Antennals 3 to 5 decidedly longer than broad ..... **Bradythrips Hood and Will.**
- b(a) Head with three pairs of forwardly directed dorsal bristles. Antennals 3 and 4 longer than broad, 5 subquadrate .....  
..... **Baenothrips J.C. Crawfd.**
- 16(13) Antennae 4- to 5-segmented.
- 17(22) Antennae 5-segmented.
- 18(21) Head without prominent dorsal bristles. Antennal joints 4 and 5 not closely united, 5 pedicellate.
- 19(20) Head as broad as long. Fore tarsi unarmed. Four long anal setae.....  
..... **Bebelothrips Buffa**
- 20(19) Head longer than broad. Fore tarsi with prominent claw. Six long anal setae ..... **Trachythrips Hood**
- 21(18) Head with two to three pairs of prominent bristles, borne on conspicuous tubercles. Antennals 4 and 5 compactly united, 5 not pedicellate. Six long anal setae ..... **Stephanothrips Tryb.**



- 22(17) Antennae 4-segmented. Six long anal setae ..... **Amphibolothrips Buffa**
- 23 (8) Distance of hind coxae less than that of middle coxae. Anal setae seldom exceptionally long.
- 24(29) Sense-cones exceptionally long and pointed, at the same time eyes very large, contiguous, and mouth-cone pointed.
- 25(26) Cheeks with warts. Fore femora armed with tooth ..... **Eupathithrips Bagn.**
- 26(25) Cheeks without warts.
- 27(28) Fore femora unarmed ..... **Sedulothrips Bagn.**
- 28(27) Fore femora with a tooth or protuberance near apex within ..... **cf. Pristothrips Hood**
- 29(24) Sense-cones normal, when long, mouth-cone rounded and eyes not unusually large, not contiguous.
- 30(49) Segment VI of the abdomen in the male usually with a lateral, horn-like projection, sometimes also segment VII with a tooth-like projection. Very large forms. Female with tube more or less densely set with setae.
- 31(40) Anterior ocellus from lateral ocelli farther apart than these from each other. (*Bactrothrips*-group).
- 32(33) Projection of segment VI forked, VII with small, VIII with larger, stouter tooth ..... **Cervothrips Bagn.**
- 33(32) Projections not divided.
- 34(35) Segment V of abdomen with a backward bent pair of lateral projections in the male sex; segment VI with a stouter, straighter pair near posterior third of segment. Hind angles of segment IX produced into small spiny hooks ..... **Eidothrips Bagn.**
- 35(34) Segment V of male simple, without such projections.
- 36(39) Segment VI of male laterally with conspicuous, horn-like process.....
- 37(38) Process of segment VI long, attaining about posterior margin of segment VII, scarcely diverging posteriorly, segments VII and VIII with a distinct lateral tooth ..... **Bactrothrips subg. Bactridothrips Karny**
- 38(37) Process of segment VI shorter and less strongly diverging, scarcely reaching middle of segment VII; this segment on either side with a short dentiform projection; segment VIII with irregular nodules..... **Bactrothrips Karny subg. Bactrothrips s.str.**
- 39(36) Segment VI laterally with a truncate hump, and a triangular tubercle before posterior angles; segment VII in posterior third with a strong forward and upward directed tooth; segment VIII with a rather sharp projection in basal third, thickened, and with a similar dentiform projection in posterior fourth ..... **Bactrianothrips Bagn.**

- 40(31) Front ocellus from hind ocelli not farther apart than these from each other. (*Megathrips*-group).
- 41(46) The tubiform abdominal projections of the male surpassing hind margin of segment VII, and bent outward.
- 42(43) Tube of female six times the length of segment IX ..... **Caudothrips Karny**
- 43(42) Tube at most four times as long as segment IX.
- 44(45) Prothorax strongly transverse. Segment VIII of male simple. Body bristles longer. Antennae comparatively shorter, intermediate joints not club-shaped ..... **Megalothrips Uz.**
- 45(44) Prothorax less strongly transverse. Segment VIII of male usually with a pair of lateral projections. Body bristles shorter. Antennae comparatively longer, intermediate joints somewhat clubbed near apex. .... **Megathrips Targ.-Tozz.**
- 46(41) Tubiform processes of segment VI scarcely attaining posterior margin of VII, bent inward.
- 47(48) Slender forms, body almost linear. Head three times as long as prothorax ..... **Bacillothrips Buffa**
- 48(47) Broad and heavy forms. Head twice as long as prothorax ..... **Siphonothrips Buffa**
- 49(30) Segment VI of abdomen in both sexes without processes.
- 50(874) Front ocellus from posterior ocelli not or not distinctly farther distant than the latter from each other, usually not placed upon the cephalic process, though sometimes on a small, conical hump; or ocelli partly reduced or wanting (v. p. 109).
- 51(52) Upper angle of base of head produced conically. Cheeks set with irregular tubercles. Legs with rows of thick, curved bristles ..... **Thilakothrips Ram. Ayyar**
- 52(51) Base of head not produced into a conical hump.
- 52a(52b) Head produced *between antennae* into a prominent, laterally flattened, parallel-sided horn about as long as the first two or three antennal joints combined. Joints 4-7 little elongate ..... **Rhinoceps Faure**
- 52b(52a) Head between antennae without any long unicorn-like process.
- 53(133) Cheeks set with bristle-bearing warts. Eyes usually large (v. p. 71).
- 54(57) Third antennal joint with dense corona of sense-cones.
- 55(56) Fore femora with a more or less heavy tooth at inner margin ..... **Ecacanthothrips Bagn.**
- 56(55) Fore femora unarmed ..... **Ormothrips Buffa**
- 57(54) Third antennal joint with at most four sense-cones.
- 53(182) Eyes moderately large, or small and only laterally developed; not wholly occupying anterior part of head (v. p. 71).

- 59(60) Wings first straight, with four blunt basal bristles, then abruptly bent before middle, so that their distal portion has not the same direction as their basal one, but wings not twisted. Body reticulate. Eyes directed forward. Antennae 7-jointed, suture on 7 indistinct ..... **Arcyothrips Hood**
- 50(59) Wings straight or bent or twisted, but not broken as indicated.
- 61(62) Wings narrowed about middle, and twisted. Antennae 8-jointed. Body reticulate ..... **Stictothrips Hood**
- 62(61) Wings not or little narrowed, or widened towards tip, sometimes curved outward, sometimes reduced or wanting; usually broader at base, than in distal half; seldom distinctly narrowed at middle.
- 63(70) Antennae 7-jointed. Body reticulate or rugose. (Monstrous specimens of *Gynaikothrips* may also come in here).
- 64(65) Vertex with two pairs of stout postocular bristles. Eyes directed forward, not attaining sides of head ..... **Strepterothrips Hood**
- 65(64) Vertex with one pair of postoculars.
- 66(67) Antennal joint 7 much smaller and slenderer than 6, not fusiform; joint 3 and 5 whitish, others wholly black ..... **Idiothrips Faure**
- 67(66) Antennal joints 7 and 8 form a fusiform unit, but may have a partial suture.
- 68(69) Head much convex dorsally. Bristles on head, prothorax and abdomen strongly knobbed. Legs tuberculate, short; fore tarsus with stout claw ..... **Stegothrips Hood**
- 69(68) Head normal, faintly reticulate. Bristles pointed. Legs normal, fore tarsus (female) with a stout tooth ..... **Agnostothrips Moul.**
- 70(63) Antennae 8-segmented.
- 71(74) Head swollen dorsally.
- 72(73) Tarsi of female unarmed ..... **Phloeobiothrips Hood**
- 73(72) Tarsi of both sexes with stout tooth ..... **cf. Pristothrips Hood**
- 74(71) Head not distinctly swollen above.
- 75(121) Wings well developed.
- 76(77) Fore tibiae at apex within produced into a long, hook-like tooth. Fore tarsi without tooth but with conspicuous claw ..... **cf. Myopothrips Pries.**
- 77(76) Fore tibiae without long hook, often, however, the tarsi armed.
- 78(116) Wings, as a rule, of even width, or somewhat widened or narrowed towards apex. Abdomen without longitudinal groove.
- 79(91) Mouth-cone rounded.
- 80(81) Body very heavy. Sides of head with many yellow spines; fore angles of prothorax with short yellow spines ..... **cf. Phasmothrips Pries.**

- 81(80) Body less heavy. No yellow spines on anterior angles of prothorax.
- 82(83,84) Cheeks with one pair of spines in posterior third. Habitus of *Liothrips* ..... cf. **Ramakrishnaiella Karny**
- 83(84,82) Cheeks with several stout bristles, originating from warts. Male with shelf-like simple projections on anterior angles of mesothorax. Wings parallel-sided. Mouth-cone rounded. Male with strong, female without tarsal tooth ..... **Probolothrips Moul.**
- 84(82,83) Cheeks with few spines, on more or less conspicuous warts. Mesothorax unarmed in both sexes.
- 85(86) Fore femora of male with two apical teeth, fore tibiae with one small tooth or tubercle ..... cf. **Hoplandrothrips Hood**
- 86(85) Male without teeth on femora or tibiae; fore femora enlarged, more strongly in the male.
- 87(90) Cheeks rounded.
- 88(89) Ocelli well developed, posteriors on a level in front of middle of eyes. Eyes larger, occupying two-fifths of sides of head ..... cf. **Treherniella Wats.**
- 89(88) Ocelli very small, hind ocelli situated in posterior third of eyes. Eyes smaller. Surface of body rough ..... **Dermothrips Bagn.**
- 90(87) Head longish, narrowed posteriorly. Two pairs of stout postoculars present ..... cf. **Philothrips Pries.**
- 91(79) Mouth-cone pointed.
- 92(111) Eyes large. Major dorsal bristles knobbed.
- 93(98) Two pairs of epimeral prothoracic bristles.
- 94(95) Fore tarsi of female unarmed, of male with small tooth. Cephalic bristles short. A furrow in front of first ocellus ..... **Notothrips Hood**
- 95(94) Fore tarsi with conspicuous tooth in both sexes. Postocular bristles conspicuous, knobbed. Head more elongate.
- 96(97) Body with white markings, either on the abdomen only, or on head and prothorax too ..... cf. **Acanthothrips Uz.**
- 97(96) Body without white markings. Dorsum of head subcarinate and compressed. Mouth-cone more strongly pointed ..... **Pselaphothrips Hood**
- 98(93) One pair of epimeral prothoracic bristles present.
- 99(110) One pair of postocular bristles present. Fore tarsi armed with tooth.
- 100(101) Fore femora in both sexes with a dark tooth near apex within. Warts on cheeks numerous, cheek spines small ..... **Acanthothrips Uz.**
- 101(100) Fore femora armed with one or two small teeth in the male only; sometimes also fore tibiae armed, near base, or teeth wanting in both sexes.

- 102(103) Segment IX of abdomen near sides of base of tube with a scale-like process. Antennal joints 7 and 8 broadly united. Bristle 3 of base of wing unusually long ..... **Gluphothrips Moul.**
- 103(102) Not these characters combined.
- 104(105) Segment VIII in the male with a stout, horn-like process laterally. .... **Phlaeothrips subg. Odontothrips Pries.**
- 105(104) Segment VIII normal in both sexes.
- 106(109) Fore femora armed near apex (within), or also fore tibiae (near base or beyond middle too). Cheek warts weak, usually one cheek spine, in basal third, conspicuous.
- 107(108) Fore tibiae of male with two projections, one in basal third, the other between middle and apex. On metanotum a dorsal process. .... **Hoplandrothrips subg. Pathothrips Hood**
- 108(107) Fore tibiae of male with a tubercle in basal third, or unarmed. Metanotum simple. (Many species) ..... **Hoplandrothrips Hood (cf. 787)**
- 109(106) Femora and tibiae unarmed in both sexes. Warts on cheeks conspicuous, spines on them small. Vertex usually subreticulate..... **Phlaeothrips Hal., s.str.**
- 110 (99) Two pairs of postoculars. Fore tarsi without teeth, but with very large, tooth-like claw, emerging from broad base ..... **cf. Philothrips Pr.**
- 111 (92) Eyes smaller.
- 112(115) Bristles on body long, pointed.
- 113(114) Cheeks with some small spines ..... **cf. Hoplothrips Serv.**
- 114(113) Cheeks with large, dark spines ..... **cf. Diceratothrips subg. Endacnothrips Pries.**
- 115(112) Body bristles smaller, knobbed or blunt <sup>(15)</sup> ..... **cf. Tetragnothrips Moul.**
- 116 (78) Wings narrow in distal half.
- 117(118) Abdomen with longitudinal groove. Eyes large. Fore femora and tarsi armed in both sexes. Anal setae much more than twice as long as tube ..... **Neurothrips Hood**
- 118(117) Abdomen without furrow. Anal setae much shorter.
- 119(120) Mouth-cone broadly rounded. Eyes small. Fore tarsi unarmed. Tube very long ..... **Atractothrips Hood**
- 120(119) Mouth-cone pointed. Eyes moderately large. Fore tarsi with tooth (female). Wings with markings. Body bristles short ..... **Tetragnothrips Moul.**

<sup>(15)</sup> If bristles long, curved knobbed, head broader than long, antennal 8-constricted at base, prothorax heavy, one epimeral bristle: cf. *Eurhynchothrips* subg. *Mimothrips* nov.



- 121 (75) Wings rudimentary or wanting.
- 122(131) Antennae normal.
- 123(126) Antennae nearly twice as long as head, joints elongate.
- 124(125) Tube short, much shorter than head ..... **cf. Malacothrips Hinds**
- 125(124) Tube very long (1.75 times as long as head). Bristles on joints 1 and 2 of antennae originating from tubercles ..... **cf. Atractothrips Hood**
- 126(123) Antennae much less than twice as long as head. Prothoracic bristles short, hyaline.
- 127(128) Surface of body and legs roughened. Vertex transversally striate. .... **cf. Dermothrips Bagn.**
- 128(127) Surface of body smooth or finely sculptured.
- 129(130) Antennal joints elongate. Head much longer than prothorax. Wings well developed. Legs normal. Habitus of *Haplothrips* ..... **cf. Cryptaplothrips Pries.**
- 130(129) Antennal joints short and stout. Head and prothorax little differing in length. Wings rudimentary or wanting. Legs short ..... **cf. Lispothrips Reut.**
- 131(122) Antennal joint 5 much larger and thicker than the small joints 6 to 8. Head long, slender, with cheeks parallel ..... **cf. Hoodiana Faure**
- 132 (58) Eyes very large, occupying the whole anterior part of the head. .... **cf. Eupathithrips Bagn.; cf. Pselaphothrips Hood**
- 133 (53) Cheeks without bristle-bearing warts, but often with *spines* that are not placed on conspicuous warts.
- 134(784) Cheeks without *strong* spines (v. p. 104).
- 135(140) Eyes unusually large, contiguous in front, antennae inserted below.
- 136(139) Mouth-cone rounded, at most labrum pointed and surpassing mouth-cone.
- 137(138) Head twice as long as broad. Fore wings with about thirty double-fringe hairs ..... **cf. Sedulothrips Bagn.**
- 138(137) Head distinctly less than twice as long as broad. Much less double-fringe hairs ..... **Holopothrips Hood**
- 139(136) Mouth-cone very long and pointed, covering part of mesosternum. Head about twice as long as broad .... **Macrophthalmothrips Karny**
- 140(135) Eyes normal or small; if eyes large and head small, antennae inserted in front.
- 141(769) Head not swollen dorsally, little convex (v. p. 103).
- 142(212) Mouth-cone more or less sharply pointed at apex (v. p. 75).
- 143(205) Antennae 8-segmented.
- 144(147) Tube as wide as long, mushroom-shaped, constricted laterally.

- 145(146) Tube without a cercus. Broad basal half of tube with transversal rows of small pits. Bristles short, knobbed. Postoculars wanting. Fore femora enlarged, fore tibiae with a blunt spine-bearing tubercle at tip within ..... **Adrothrips Hood**
- 146(145) Tube with a cercus about half length on each side, toothed within. .... **Hannibalia Gir.**
- 147(144) Tube normal.
- 148(195) Fore wings not narrowed in the middle, or vestigial or wanting.
- 149(150) Head shorter than pronotum. Wings and ocelli wanting ..... **Aspidothrips Karny**
- 150(149) Head about as long or longer than pronotum; when shorter, wings and ocelli present.
- 151(160) Head not or scarcely longer than pronotum, or very little shorter.
- 152(157) Antennal joints 7 and 8 distinctly separated, 7 distinctly broader at apex than 8 at base.
- 153(154) Fore femora *much* enlarged, nearly as broad or broader than head. Antennae elongate ..... **Arrhenothrips Hood**
- 154(153) Fore femora not or slightly enlarged.
- 155(156) Mouth-cone long, sides straight, at least attaining mesosternum. Head long, parallel-sided. Antennal 8 not constricted at base..... **cf. Hoplothrips Serv.**
- 156(155) Mouth-cone shorter, more strongly narrowed towards tip. Head shorter, usually not exactly parallel-sided. Joint 8 usually distinctly constricted ..... **Eurhynchothrips Bagn.**
- a(b) Two epimeral bristles on either side of prothorax ..... **Subg. Eurhynchothrips, s.str. (convergens Bgn. and flavicornis Bagn.)**
- b(a) One epimeral bristle present.
- c(d) Fore tarsi unarmed. Tube normal. Cheeks with a few small warts... **Subg. Mimosiphis nov. (typ. subg. E. hargreavesi Pr.)**
- d(c) Fore tarsi with small tooth (female). Tube slightly convex. Wings with short dark cross-band ..... **Subg. Nephrothrips nov. (typ. subg. E. bipunctatus Pr.)**
- 157(152) Antennals 7 and 8 united, 8 as broad at base as 7 at apex, or nearly so.
- 158(159) Head not or hardly longer than broad, sometimes broader than long. Many species ..... **Rhynchothrips Hood**
- 159(158) Head decidedly longer than broad ..... **Horistothrips Morg.**
- 160(151) Head distinctly longer than pronotum.
- 161(166) Head broader than long.
- 162(165) Antennae slender, joints 3 and 4 longest.
- 163(164) Habitus of *Ethirothrips* (cf. 178). Cheeks with a few prominent

- setae. A long series of duplicated cilia present. Length more than 2.3 mm. (fossil) ..... **Liotrichothrips Bagn.**
- 164(163) Habitus of *Liothrips*. Cheeks with inconspicuous setae. Less than ten double-fringe hairs. Length less than 1.5 mm. .... **Brachythrips Reut.**
- 165(162) Antennae shorter; joint 3 very small <sup>(16)</sup> ..... **Lissothrips Hood subg. Prolissothrips Morg.**
- 166(161) Head longer than broad.
- 167(184) Wings fully developed.
- 168(183) Fore femora and fore tibiae unarmed.
- 169(172) Fore femora strongly enlarged (male), front ocellus protruding, as in *Leptothrips*.
- 170(171) Fore tarsi, at least in the male, with tooth. Width of head equals length of pronotum. Wings narrower than in *Liothrips* ..... **Leptolothrips Moul.**
- 171(170) Fore tarsi without tooth, but with large, broadly set claw. Two pairs of postoculars. Mouth-cone rounded at tip ..... **cf. Philothrips Pries.**
- 172(169) Fore femora not or only slightly enlarged. Front ocellus normally situated, if surpassing interantennal projection, prothorax much shorter than breadth of head.
- 173(180) Tube, as a rule, more than half the length of head.
- 174(175) Prothorax with two epimeral setae on either side ..... **Phrasterothrips Pries.**
- 175(174) Prothorax with only one epimeral seta on either side.
- 176(179) Legs long and slender.
- 177(178) Cheeks without setae, or they are, as usual, inconspicuous. Fore tarsi unarmed in both sexes. Many species <sup>(17)</sup>. .... **Liothrips Uz.**
- 178(177) Cheeks set with some conspicuous bristles. Fore tarsi armed in both sexes, tooth broad. Antennae black. Fore wings with 40 or more double-fringe hairs. Large forms ..... **Ethirothrips Karny**
- 179(176) Legs short, heavier. .... **cf. Rhynchothrips Hood**
- 180(173) Length of tube about half the length of head.
- 181(182) A pair of long ante-ocular bristles. Black insects of *Liothrips* habitus ..... **Trybomia Karny**
- 182(181) Antecellars wanting or very small. Head somewhat convex dorsally ..... **cf. Pygmaethrips Ka.**

<sup>(16)</sup> If joint 3 normal, cf. *Eurihynchothrips* Bagn. (two pairs of epimeral bristles).

<sup>(17)</sup> The genus still contains species with tarsal tooth, e.g., *L. tarsidens* Tryb. and *L. trybomi* Ka. which belong elsewhere.

- 183(168) Fore femora incrassate in both sexes, with a large subapical tooth within, sometimes with a series of small basal teeth; fore tibiae with several (3-8) stout teeth within ..... **cf. *Pristothrips* Hood**
- 184(167) Wings reduced or wanting.
- 185(186) Antennal joint 3 much longer than the others ..... ***Leptogastrothrips* Tryb.**
- 186(185) Joint 3 not or scarcely longer than other joints, or shorter.
- 187(188) Antennal joint 3 exceptionally short, shorter than 8 ..... ***Lissothrips* Hood**
- 188(187) Antennal 3 longer than 8.
- 189(190) Thorax with a white band on each side, continuing onto the anterior abdominal segments ..... ***Poecilothrips* Uz.**
- 190(189) Body unicolorous, thorax without white bands. Eyes mostly small.
- 190a(190b) Head with a notch behind moderately large eyes, Antennal 8 constricted at base ..... ***Malacothrips* Hinds**
- 190b(190a) Cheeks without notch behind eyes.
- 191(192) Eyes dorsally occupying about 0.35 of length of head ..... **cf. *Rhynchothrips* Hood**
- 192(191) Eyes very small, consisting of only a few facets.
- 193(194) Antennals 7 and 8 broadly united. Head produced or not. Tube heavy ..... ***Neothrips* Hood**
- 194(193) Joint 7 separated from 8. Head convex dorsally ..... **cf. *Pygmaethrips* Ka.**
- 195(148) Wings narrowed in the middle.
- 196(197) Fore femora and tibiae armed with teeth ..... **cf. *Euoplothrips* Hood**
- 197(196) Fore femora unarmed.
- 198(199) Surface of head reticulate. Body bicolorous. Wings little widened in distal half, narrowly rounded at tip ..... ***Baphothrips* Pries.**
- 199(198) Head smooth or with very fine and close transversal striae.
- 200(201, 204) Head long and narrow, parallel-sided or slightly narrowed towards base, 1.5 times to twice as long as broad. Body slender. Front ocellus somewhat protruding, on a small hump. Mouth-cone thin, sides somewhat concave. Abdomen strongly tapering posteriorly. Wings always clear ..... ***Dolichothrips* Karny**
- a(b) Fore femora much enlarged, fore tarsi with stout tooth ..... **Subg. *Dolichothrips*, s.str.**
- b(a) Fore femora not or little enlarged. Fore tarsi simple or with fine tooth ..... **Subg. *Dolicholepta* Pries.**
- 201(204, 200) Head one-third longer than broad at the most, with slightly convex cheeks. Body less slender, about as in *Haplothrips*.

- 202(203) Wings comparatively much narrowed at middle. Head not neck-like constricted at base ..... **cf. Neoheegeria Schmutz**
- 203(202) Wings slightly narrowed. Cheeks neck-like constricted near base. .... **cf. Mesothrips Zimm.**
- 204(201, 200) Head long, parallel-sided, or widened posteriorly, dorsally convex. Eyes somewhat produced beneath ..... **Pygmaeothrips Ka.**
- 205(143) Antennae 7-segmented, suture between 7 and 8 indistinct or wanting.
- 206(209) Wings fully developed or reduced, ocelli present.
- 207(208) Head without distinct reticulation. Tube short and heavy, with longitudinal thickenings. Wings normal ..... **cf. Symphyothrips Hood and Will.**
- 208(207) Head with conspicuous reticulation. Tube normal. Wings broken in the middle ..... **Arcyothrips Hood**
- 209(206) Wings and ocelli wanting.
- 210(211) Antennae 3 and 5 white, the remaining joints wholly black. Cheeks rough ..... **cf. Idiothrips Faure**
- 211(210) Antennal joints not alternating black and white, joint 3 much longer than 4, Head scarcely longer than wide ..... **Empresmothrips Karny**
- 212(142) Mouth-cone rounded at apex.
- 213(336) Wings more or less narrowed in the middle, or, tapering to middle then narrowed and about parallel-sided; when wanting or reduced, prothorax not broader than head (v. p. 83). Body not ant-like.
- 214(321) Prothoracic bristles simple, pointed or blunt or otherwise, but never distinctly infundibuliform and at the same time very short and transparent (v. p. 82).
- 215(222) Antennae 6- or 7-segmented.
- 216(217) Antennae 6-segmented ..... **cf. Priesneriella Hood**
- 217(216) Antennae 7-segmented.
- 218(219) Bristles of body unusually long. Antennal 7 with indistinct suture, 3 normal ..... **cf. Trichinothrips Bagn.**
- 219(218) Bristles moderately long, antennal joint 7 without suture, 3 very small, shorter and smaller than any of the following joints.
- 220(221) Head and thorax very small. Abdomen very large and broad..... **Williamsiella Hood**
- 221(220) Head comparatively large. Abdomen short and relatively broad..... **cf. Parallothrips Hood**
- 222(215) Antennae 8-segmented (7 and 8 sometimes forming a compact mass, but divided by a suture).
- 223(234) Antennal joints 2 or 3, about as in many *Chirothrips* species, sharply produced exteriorly, or joint 3 with a distinctly elevated sub-basal ring of shelf-like thickening.



- 224(227) Joints 2 or 3 produced laterally.  
 225(226) Joint 3 produced laterally. Habitus of *Haplothrips* ..... **Goniothrips Hood**  
 226(225) Joint 2 produced ..... **Chiridothrips Ram.**  
 227(224) Joint 3 with subbasal ring.  
 228(229) Fore and hind femora incrassate, the latter stouter than the former.  
     Body rather heavy, more than in *Hoplothrips* .... cf. **Priesneria Bagn.**  
 229(228) Legs slender or at least femora not incrassate. Body slender.  
 230(231) Eyes strongly produced caudad in dorsal aspect. Bristles on head  
     and prothorax extremely minute. Body pale, with brown markings  
     Tarsi unarmed. Habitus cephalothripoid ..... **Jacotia Faure**  
 231(230) Eyes normal. Bristles on head and prothorax well developed. Body  
     black or dark brown.  
 232(233) Legs and antennae long and slender. Pterothorax transverse. Tarsal  
     tooth of female wanting. Major bristles knobbed ..... **Hadothrips Pries.**  
 233(232) Legs short, antennae moderately long. Pterothorax not transverse  
     Tarsal tooth curved as in *Watsoniella*. Bristles pointed ..... **Agrothrips Jacot-Guill.**  
 234(223) Neither joint 2 nor joint 3 abnormal.  
 235(308) Fore femora unarmed <sup>(18)</sup>.  
 236(305) Fore tibiae unarmed.  
 237(238) Antennal joint 3 small, shorter than 8 ..... cf. **Lissothrips Hood**  
 238(237) Antennal 5 somewhat or much longer than 8.  
 239(266) Prothorax (inclusive of coxae) not much broader than head.  
 240(245) Mouth-cone nearly attaining mesosternum. Head much longer than  
     broad.  
 241(244) Ocelli present. Fore tarsi unarmed, at least in the female.  
 242(243) Eyes occupying about one-fifth of length of head. Fore tarsi un-  
     armed in both sexes ..... **Gnophothrips Hood and Will.**  
 243(242) Eyes occupying about one-fourth of length of head. Fore tarsi armed  
     in male ..... cf. **Cryptaplothrips Pries.**  
 244(241) Ocelli wanting ..... cf. **Apterygothrips Pries.**  
 245(240) Mouth-cone short, reaching about middle of prosternum, if segments  
     normally distended.  
 246(247) Head much broader than long, widened posteriorly. Always macrop-  
     terous, without double-fringe. Habitus of *Haplothrips* ..... **Euryaplothrips Ram. and Marg.**

<sup>(18)</sup> cf. *Aleurodothrips* : Wings banded, narrow for the greater part, widened at base, where fore margin strongly convex; yellow species with dark markings.

- 247(246) Head about as long as broad or longer than broad.
- 248(257) Sides of pronotum strongly diverging posteriorly. Head about as long as broad.
- 249(252) Ocelli present.
- 250(251) Small forms. Head not angular behind eyes ..... **Bagnalliella Karny**
- 251(250) Large forms. Head somewhat angular behind eyes .....  
..... **cf. Gratothrips Pries.**
- 252(249) Ocelli and wings wanting.
- 253(254) Antennal joints 7 and 8 sharply separated. Head about 1.8 times as long as prothorax ..... **cf. Hypothrips Pries.**
- 254(253) Antennal 8 united with 7.
- 255(256) Head distinctly longer than broad. Margin of vertex normal .....  
..... **cf. Apterygothrips Pries.**
- 256(255) Head distinctly broader than long. Posterior margin of head broadly sinuated, with a small tooth on either side ..... **Bagnalliola n.**
- 257(248) Head decidedly longer than broad. Sides of pronotum slightly diverging posteriorly.
- 258(259) Head with granulation. Antennal joint 6 small, 5 much broader than the following joints ..... **cf. Hoodiana Faure**
- 259(258) Head without small warts or granules, or these are inconspicuous. Ocelli present (if absent, cf. 254).
- 260(261) Very large form, head heavy; cheeks almost angularly protruding behind eyes ..... **cf. Gratothrips Pries.**
- 261(260) Much smaller forms.
- 262(263) Terminal three antennals somewhat more closely united than the preceding joints, but all with complete suture .... **Cephalothrips Uz.**
- 263(262) Antennae as usual.
- 264(265) Tube very short, strongly conical. Cheeks convex, much narrowed towards base, or even constricted behind. Tibiae short .....  
..... **cf. Bagnalliella Ka.**
- 265(264) Tube normal. Cheeks very little convex. Legs slender .....  
..... **cf. Cryptaplothrips Pries.**
- 266(259) Prothorax (inclusive of coxae) much broader than head.
- 267(304) Head of varying shape, sometimes with sides convex, but without conspicuous convexity on vertex.
- 268(303) Antennals 7 and 8 well separated, at least by a complete suture. (v. p. 80).
- 269(300) Front ocellus situated dorsally on a small elevation of the head, not surpassing insertion of antennae, or placed on the dorsal surface itself; or ocelli wanting, v. p. 80)
- 270(271) Setae on anterior angles of pronotum vestigial, laterals, and postero-

- angulars well developed, pale. Head somewhat constricted behind large eyes. Eyes with posterior angles farthest back. Head as long as broad, cheeks arched. Antennal 8 constricted at base. Double-fringe wanting ..... **Psalidothrips Pries.**
- 271(270) Setae on fore margin of pronotum developed (sometimes hyaline and infundibuliform), if not conspicuous, in this case the head somewhat longer than broad and not constricted behind eyes. Base of eyes rounded.
- 272(281) Wings narrowed towards middle, nearly evenly wide from middle to tip. Eyes sometimes produced beneath. Antennal joint 8 not quite close to 7, long and slender. Head sometimes somewhat produced in front.
- 273(274) Joint 3 of antennae shorter than 2 or 4, with basal margins thickened and basal angles nearly dentiform; joint 6 shorter than either 5 or 7 ..... **Priesneria Bagn.**
- 274(273) Joint 3 different.
- 275(276) Body bristles (pronotum !) short, hyaline, decidedly funnel-shaped. Head somewhat broader than long, sides convex, constricted behind. Antennal 3 much elongate. Fore tarsi with large, forwardly directed tooth in both sexes, fore femora much, hind femora somewhat enlarged ..... **Boothrips Pries.**
- 276(275) Major bristles not hyaline and funnel-shaped.
- 277(280) Head not produced in front. Antennal 8 not distinctly constricted at base.
- 278(279) Antennal joint 3 slightly asymmetrical, as in *Haplothrips*. Head not or not much narrowed towards base. Sense-cones normal ..... **cf. Adraneothrips Hood**
- 279(278) Antennal joint 3 symmetrical, very narrow at base. Sense-cones very long and slender. Head much narrowed towards base, width somewhat less than length from fore margin of eyes. Fore tarsi of female unarmed ..... **Phylladothrips Pries.**  
(cf. *Logadothrips* : antero-angulars of pronotum very long, knobbed, sense-cones normal).
- 280(277) Head produced in front into a *short* process on which the first ocellus is placed; this process slightly but distinctly reticulate. Antennal 8 long, constricted at base. Macropterous and brachypterous. .... **Apelaunothrips Karny (Ophidothrips Ka. nec Schmutz) (\*)**
- 281(272) Eyes on under side of head not produced. Antennal joint 7 usually somewhat close to 8, or wings narrowed in the middle or somewhat

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(\*) cf. *Malacothrips* Hinds.

widened beyond it; if this is not the case, fore femora much enlarged, or head much constricted behind, or both. Wings seldom vestigial or wanting.

- 282(283) Wings and ocelli wanting ..... cf. 253
- 283(282) Ocelli developed, wings sometimes reduced.
- 284(295) Femora not or only moderately enlarged in the female. Antennal joint 3 without conspicuous ring-shaped thickening near base.
- 285(286) Head much broader than long. Antero-angular prothoracic setae long, knobbed ..... **Logadothrips Pries.**
- 286(285) Head at most as broad as long, usually somewhat or considerably longer than broad.
- 287(294) Wings of *Haplothrips* type, in rare cases reduced.
- 288(291) Anal setae never twice as long as tube. Fore femora of female, as a rule, scarcely or not enlarged. Antennal 3 somewhat asymmetrical. Tooth of fore tarsi normal or wanting in the female; if it is larger, then it emerges from a broad base.
- 289(290) Fore femora at exterior fore angle produced into a minute, outwardly curved hook. Antennal joint 4 with but two sense-cones...  
..... **Chiraplothrips Pries.**
- 290(289) Fore femora simple. Antennal 4 with four sense-cones. Many species (cf. *Bagnalliella*, cf. *Cryptaplothrips*) ..... **Haplothrips Serv.**
- a(b) Antennal joint 3 with three sense-cones .....  
..... **Subg. Gigaplothrips nov. (typ. subg. G. giganteus Pries.)** R
- b(a) Antennal 3 with 0 to 2 sense-cones.
- c(h) Antennal 3 with one or two sense-cones.
- d(e) Wings of macropterous forms with double-fringe .....  
..... **Subg. Haplothrips s.str.**
- e(d) Wings of macropterous forms without double-fringe, or antennae exceptionally short and stout.
- f(g) Wings fully developed or reduced, in the latter case antennae normal .....  
..... **Subg. Trybomiella Bagn.**
- g(f) Wings reduced. Antennae short and stout, major bristles strongly knobbed ..... **Subg. Chonothrips John**
- h(c) Antennal joint 3 without sense-cones.
- i (j) Fore wings of macropterous form without double-fringe. Joints 6 to 8 of antennae firmly united by the broad bases of 7 and 8. ....  
..... **Subg. Anchyllothrips Hood**
- j (i) Fore wings with double fringe. Joints 6 to 8 normal .....  
..... cf. subg. **Haplothrips s.str.**
- 291(288) Anal setae about twice as long as tube. Fore femora often more or less enlarged in both sexes. Antennal 3 symmetrical. Tooth of fore

- tarsi, at least in the female, somewhat directed forward, sometimes issuing far forward, in rare cases small or wanting.
- 292(293) Fore femora enlarged. (Bark inhabiting, predaceous) ..... **Watsoniella Karny**
- 293(292) Fore femora normal. Antennal 8 sometimes constricted at base ... **Xylaplothrips Pries.**
- 294(287) Wings of *Mesothrips* type, i.e. tapering towards middle, of about even width in distal half. Wings never reduced nor wanting.
- a(b) Cheeks with small spines, head neck-like constricted near base.... **Mesothrips Zimm. subg. Paramesothrips Pries.** <sup>(19)</sup>.
- b(a) Cheeks without spines. Habitus of *Haplothrips*, but joint 3 symmetrical, fore femora of female somewhat enlarged, prothoracic bristles long, knobbed. (Fore femora often yellow at apex) ..... **Mesandrothrips Pries.**
- 295(284) Fore femora of female much enlarged. <sup>(19)</sup>.
- 296(299) Joint 3 with ring-shaped thickening near base.
- 297(298) Wings fully developed. Legs short, all femora broad, also hind femora enlarged ..... **cf. Priesneria Bagn.**
- 298(297) Wings reduced or wanting. Legs slender ..... **cf. Hadothrips Pries.**
- 299(296) Joint 3 normal. Fore femora of male simple. Head often somewhat constricted near base, cheeks set with spines. Antennal 3 much widened towards apex. Tropical gall-producers ..... **Mesothrips Zimm. (cf. Mesandrothrips Pr., 294)**
- 300(269) Front ocellus placed on a distinct elevation situated in front of eyes, directed forward, visible between the antennal bases, i.e., in front of interantennal projection, surpassing the latter. Antennae inserted a little below eyes. Habitus of *Dolicholepta*.
- 301(302) Antennal joint 8 broad at base. Ocellar hump without reticulation. .... **Leptothrips Hood**
- 302(301) Antennal 8 fusiform, long. Antennae on a distinct process, inserted in front of eyes. Ocellar elevation with net-like structure ..... **cf. Apelaunothrips Karny**
- 303(268) Antennals 7 and 8 forming a unit that is separated by a suture. Head much longer than broad. Bicolourous ..... **Asemothrips Hood**
- 304(267) Head with strongly convex dorsal surface, narrowed towards base. .... **Craniothrips Bagn., (cf. Cratothrips Pr.)**
- 305(236) Fore tibiae with a small tooth-like projection at apex. Fore tarsi sometimes with a strong tooth as well.

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<sup>(19)</sup> *Boothrips* Pries. cannot be confused, for reason of having bristles funnel-shaped, terminal antennal joints very slender, and wings very narrow.



- 306(307) Prothorax as long as head. Fore wings without double-fringe. (Inhabiting *Gramineae*) ..... **Podothrips Hood**  
 a(b) Head only a little longer than wide. Body vividly coloured ..... **Subg. Podothrips s.str.**  
 b(a) Head slender, much longer than broad. Body almost or wholly dark.  
 c(d) Fore femora with a conspicuous hump at base within. In the middle of tergite II no bristleless pores. Joint 3 of antennae with one sense-cone ..... **Subg. Kentronothrips Moul.**  
 d(c) Fore femora without hump at base. Joint 3 of antennae with one or two sense-cones ..... **Subg. Melampodothrips Pries.**  
 307(306) Prothorax shorter than head. Fore wings with double-fringe hairs. Gall inhabiting ..... **Glenothrips Pries.**  
 308(235) Fore femora within (in male or both sexes) with a more or less stout tooth or blunt hump, sometimes with two or more teeth at apex.  
 309(312) Prothorax one-third broader than head. Antennae not quite twice as long as head.  
 310(311) Wings banded, narrow, but much widened in basal portion of fore margin. Body yellow, with dark markings. Base of antennae pale. .... **Aleurodothrips Frankl.**  
 311(310) Body unicolorous. Wings mostly reduced or wanting. Base of antennae dark ..... **cf. Cryptaplothrips Pries.**  
 312(309) Antennae seldom more than 1.5 times as long as head. Prothorax 1.5 times, often even twice as broad as head.  
 313(316) Teeth of fore femora situated near apex.  
 314(315) Fore femora apically with a series of four teeth, the most proximal of which is largest. Fore tibiae very short, with a series of small tubercles. Head somewhat longer than antennae, very slender ..... **Veerabahuthrips Ram.**  
 315(314) Fore femora apically within with two small teeth (in the male), base of fore tibiae with or without tubercle ..... **cf. Hoplandrothrips Hood**  
 316(313) Teeth of fore femora situated at base or at middle, or fore femora with a blunt hump.  
 317(318) Fore femora enlarged, with a tooth or hump *near base*, often crenulated or roughened distad. Fore tibiae unarmed or with a weak, flat scale apically within. Gall thrips ..... **Androthrips Karny**  
 318(317) Fore femora enlarged or almost normal, before middle with a tooth, horn or hump.  
 319(320) Femoral tooth pointed; fore tibiae with tooth-like projection near middle or with two teeth ..... **Euoplothrips Hood**

- 320(319) Tooth of fore femora blunt, fore tibiae only apically with a small tooth ..... cf. **Podothrips Hood, 306 c(d)**
- 321(214) Prothoracic bristles funnel-shaped, transparent, very short <sup>(20)</sup>.
- 322(323) Head very long and slender. Habitus of *Urothrips*. Antennal 5 large, much larger than any of the three following joints ..... cf. **Hoodiana Faure**
- 323(322) Head very short, or antennae otherwise.
- 324(331) Intermediate antennal joints longer and slenderer, all joints free, and of normal shape. Head with a depression between eyes and interantennal projection.
- 325(326) Fore femora crenulated at inner margin (male), with a stout basal tooth; fore tibiae with a tooth-like process at apex within. Bristles on segment IX very short, infundibuliform ..... **Scopaeothrips Hood**
- 326(325) Fore femora and fore tibiae normal, simple, fore femora of both sexes much, hind femora somewhat, enlarged; tooth on fore tarsi large, obliquely directed forward.
- 327(330) Wings present.
- 328(329) Wings narrowed towards middle, a little widened in distal half. Three terminal antennal joints very slender. Bristles on segment IX of abdomen rather long ..... **Boothrips Pries.**
- 329(328) Wings not narrowed, broadest behind middle. Terminal joints not very slender ..... **Brithothrips Moul.**
- 330(327) Wings wanting. Similar to *Scopaeothrips*, but head not produced in front. No clubbed bristles on head and fore margin of pronotum. .... **Spilothrips Moul.**
- 331(324) Intermediate antennal joints shorter, joints 6 to 8 somewhat more closely united (about as in *Cephalothrips*). Fore femora and fore tibiae simple in both sexes.
- 332(333) Body and antennae bicolorous. Antennal 2 nearly globular and very broad, with joint 4 distinctly stouter than the slender joint 3. Major bristles infundibuliform ..... **Rhopalothrips Hood**
- 333(332) Unicolorous forms. Intermediate antennal joints of normal form. Major bristles less distinctly infundibuliform. Australian genera.
- 334(335) Head distinctly longer than pronotum which is strongly transverse (at least 2.25 times as broad as long) in both sexes. Mouth-cone broadly conical, pointed at apex. Abdomen elongate-ovate ..... **Rhopalothripoides Bagn.**
- 335(334) Head of female only little longer than pronotum, in the male shorter than the latter. Mouth-cone large, bluntly rounded. Pronotum

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(<sup>20</sup>) cf. *Idiothrips*, *Haplothrips*, *Lisothrips*.

- larger, twice or less than twice as broad as long, still more widened in the male. Abdomen broadly oval ..... **Froggattothrips Bagn.**
- 336(213) Wings not narrowed in the middle; if they are reduced or wanting, the pronotum distinctly broader than head, or body ant-like.
- 337(496) Head not or scarcely longer than prothorax. (v. p. 90).
- 338(468) Fore tibiae unarmed (v. p. 89).
- 339(340) Fore angles of mesothorax on either side with two digitated thorns and some smaller ones nearby ..... **Tetracanthothrips Bagn.**
- 340(339) Fore angles of mesothorax without finger-like processes.
- 341(342) Bristles on prothorax very short, funnel-shaped, hyaline .... **cf. 321**
- 342(341) Bristles pointed, blunt or knobbed, but not very short, transparent and infundibuliform.
- 343(382) Head decidedly broader than long.
- 344(345) Tube striate or carinated longitudinally, sides convex towards apex, and here constricted (cf. 376) ..... **cf. Acallurothrips Bagn.**
- 345(344) Tube different.
- 346(347) Eyes very large, consisting of many facets, protruding. Posteroangular prothoracic bristles very small. Macropterous. (Fossil) ..... **Necrothrips Pries.**
- 347(346) Eyes, if large, not strongly protruding, or small, consisting of few facets.
- 348(367) Antennal joint 8 distinctly separated from 7, not closely united, together they are mostly longer than joint 3.
- 349(366) Cheeks unarmed.
- 350(361) Cheeks straight, parallel or slightly converging. Prothorax heavy, sometimes about twice as long as head or little less. Wings developed or wanting.
- 351(354) Bristles knobbed.
- 352(353) Male without wings or ocelli, female macropterous, with ocelli. Tarsal tooth of male large. Antennal 8 constricted at base, fusiform. .... **Austrothrips Brèthes**
- 353(352) Both sexes with wings and ocelli. Tarsal tooth very small or wanting. .... **cf. Eurhynchothrips Bagn.**
- 354(351) Bristles blunt or pointed (cf. *Teuchothrips*).
- 355(356) Bristles blunt. Tube longer than head. (Fossil) ..... **Schlechtendalia Bagn.**
- 356(355) Bristles pointed. Areola on joint 2 of antennae placed near base.
- 357(358) Antennal joint 2 dilated at apex, chirothripoid ..... **Chiridothrips Ram. and Marg.**
- 358(357) Joint 2 of antennae normal.
- 359(360) Eyes larger, evenly truncate on upper and lower surface of head.

- Macropterous. Tibiae of hind legs with stout terminal spurs. Near *Plectrothrips* ..... **Hammatothrips Pries.**
- 360(359) Eyes smaller, somewhat produced exteriorly, on under side of head. Tibiae without terminal spurs. Prothorax very heavy. (Position of areola on antennal 2 not known) ..... **cf. Vuilletia Ka.**
- 361(350) Cheeks more or less strongly arched, converging posteriorly.
- 362(365) Areola on joint 2 between middle and apex.
- 363(364) Cheeks unarmed. Wings normal ..... **cf. Eurhynchothrips Bagn.**
- 364(363) Cheeks with small spines. Wings reduced ..... **cf. Lispothrips Reut.**
- 365(362) Areola of joint 2 between middle and base ..... **Eurytrichothrips Pr.**
- 366(349) Cheeks with small spines ..... **cf. 364**
- 367(348) Antennal joint 8 broadly united with 7, sometimes more or less completely separated by a circular suture.
- 368(373) Prothorax at least somewhat shorter than head. Ocelli present. Head broadest across cheeks, eyes not protruding.
- 369(372) Tube with longitudinal carinae.
- 370(371) Prothorax shorter than head ..... **Neosmerinthothrips Schmutz**
- 371(370) Prothorax about as long as head, very heavy ..... **cf. Sophiothrips Hood**
- 372(369) Tube normal, without longitudinal thickenings ..... **cf. Trichinothrips Bagn.; cf. Neoecidothrips Bagn.**
- 373(368) Prothorax longer than the small head. Wings and ocelli often reduced or wanting. Eyes protruding or not, in f. apterae small, and consisting of only few facets, or eyes normal. Antennal joint 8 all around separated from 7, or only indistinctly separated by a partial suture.
- 374(377) Bristles long, knobbed.
- 375(376) Antennal 3 very small. Sense-cones normal ..... **Phthirothrips Pries.**
- 376(375) Antennal 3 normal. Sense-cones long. Sternites produced. Tube heavy, longitudinally carinated, constricted at apex ..... **cf. Sophiothrips Hood**
- 377(374) Bristles very short, often stout, pointed. Mouth-cone very broadly rounded. Antennal 6 large.
- 378(379) Head swollen dorsally, produced in front of eyes, with a pair of long ante-ocular bristles; postoculars near lateral margin of small eyes; head notched behind eyes, with a tubercle behind notch; male with two pairs of ventral horns, female without; antennae inserted well below vertex. Anterior angles of mesothorax produced. Macropterous or brachypterous. Duplicated setae wanting. Fore femora enlarged, fore tarsi with stout tooth, tibiae curved..... **Zaxenothrips J.C. Crawford.**

- 379(378) Not these characters combined.
- 380(381) Fore femora enlarged, middle and hind femora beyond middle with a small spine at exterior margin. Head sinuated at posterior margin of vertex, with a small projection on either side of basal margin. Antennal 3 without sense-cone ..... **Bagnalliola nov. (typ. gen. Brachythrips terminalis Bagn.-**
- 381(380) Femora simple, without spine. Basal margin of vertex normal. Antennal 3 with one sense-cone ..... **Nanothrips Faure**
- 382(343) Head as broad as long or longer.
- 383(447) Antennae 8-segmented.
- 384(397) Head broadest near base (in perfect preparations), with cheeks distinctly converging anteriorly.
- 385(386) Antennal 2 produced as in *Chirothrips*, areola about in the middle. Joint 8 longer than 3 ..... **Chiridothrips Ram. and Marg.**
- 386(385) Antennal joint 2 not produced exteriorly.
- 387(388) Sternite VIII on posterior margin with dagger-like processes of different lengths (lateral longest). Antennae moniliform, joint 8 constricted basally, intermediate joints transverse. Areola near base. .... **cf. Chirothripoides Bagn.**
- 388(387) Sternite VIII simple.
- 389(390) Antennae unusually thick, moniliform ..... **Margaritothrips Pries.**
- 390(389) Antennae normal or short, but not thickly moniliform.
- 391(396) Abdomen not or little broader than prothorax.
- 392(393) Apical margin of fore femora thickened exteriorly, as in *Chirothrips* or *Chiraplothrips* ..... **cf. Thorybothrips Pries.**
- 393(392) Fore femora normal.
- 394(395) Prothorax at anterior margin broader than medianly long. Antennae slender ..... **Koptothrips Bagn.; Cecidothrips Kieffer** <sup>(21)</sup>
- 395(394) Anterior margin of prothorax decidedly shorter than its median length ..... **Chelaeothrips Karny**
- 396(391) Abdomen exceptionally broad, much broader than the prothorax... ..... **Eurythrips Hinds.**
- 397(384) Head (in distended and not crushed specimens) not broadest at base.
- 398(399) Mouth-cone as long as dorsal surface of head ..... **cf. Eurhynchothrips Bagn.**
- 399(398) Mouth-cone decidedly shorter than the rest of the head, in cases of doubt hind tibiae pale, with abruptly dark fore margin.
- 400(403) Areola of antennal joint 2 between base and middle. Fore tarsal

(<sup>21</sup>) Description of the latter genus insufficient and unreliable.



- claw large. At least hind tibiae with stout spur; fore tibiae sometimes with small apical tooth.
- 401(402) Sternite VIII simple. Head large ..... **Plectrothrips Hood**
- 402(401) Sternite VIII with various dagger-shaped processes at hind margin. Head slender ..... **Chirothripoides Bagn.**
- 403(400) Areola of joint 2 situated between middle and apex.
- 404(405) Mouth-cone very short and small. Fore femora near base within with a blunt convexity (hump). Basal antennal joints very stout, terminal joints very slender, 8 longest. Fore tarsi with two pointed and one rounded tooth, middle and hind tarsi with long, tooth-like claw. Tube short and thick. .... **cf. Mastigothrips Pries.**
- 405(404) Not agreeing with the above description.
- 406(442) Tube, in comparison with head, not remarkably short, without longitudinal furrows.
- 407(441) Tube less than 1.4 times as long as head, often shorter than head.
- 408(409) Fore femora much enlarged in both sexes, but not compressed. Cheeks with spines, head much constricted near base. .... **cf. Mesothrips auct. (s.lat.)**
- 409(408) Fore femora sometimes enlarged in the female; if they are strongly incrassate, they are dorsiventrally compressed, too.
- 410(418) Fore femora very strongly enlarged.
- 411(414,415) Head shorter than prothorax.
- 412(413) Areola of joint 2 between middle and apex. .... **Barythrips Hood and Will.**
- 413(412) Areola of joint 2 between base and middle. Body depressed. Joint 8 of antennae long, fusiform. .... **cf. Plectrothrips Hood**
- 414(411,415) Head as long as prothorax, constricted behind. Tube narrowed posteriorly, narrow at apex. .... **Moultonia Bagn.**
- 415(414,411) Head longer than prothorax.
- 416(417) Head long, cylindrical, slightly narrowed towards antennae. Bristles on head and prothorax long, slightly blunt. Turf inhabiting. .... **cf. Thorybothrips Pries.**
- 417(416) Head about as long as broad. Prothoracic bristles short, stout, knobbed. Gall thrips. .... **Neocecidothrips Bagn.**
- 418(410) Fore femora of female not or moderately enlarged.
- 419(430) Head distinctly longer than broad.
- 420(427) Antennae long, wings sometimes reduced.
- 421(422) The two terminal antennal joints not forming a unit. .... **Hoplothrips, Serv.**
- 422(421) These two joints forming a single mass.
- 423(424) Surface of tube with ill-formed longitudinal striae. Tarsi with two stout teeth. .... **cf. Moultonia Bagn.**

- 424(423) Surface of tube normal.
- 425(426) Mouth-cone not attaining posterior margin of prosternum, labrum not surpassing labium. Fore tarsi with a long, stout, curved tooth.  
..... **cf. Teuchothrips Hood; cf. Syncerothrips Hood**
- 426(425) Mouth-cone heavy, attaining posterior margin of prosternum, labrum surpassing labium. Fore tarsi unarmed. ....  
..... **cf. Gymnothrips Karny**
- 427(420) Antennae shorter. Fore tarsi never with stout tooth.
- 428(429) Prothorax much widened posteriorly. .... **Eothrips Hood**
- 429(428) Prothorax little widened posteriorly, at hind margin at most two-fifths broader than head. (Insufficiently described). ....  
..... **Eumorphothrips Schmutz**
- 430(419) Head not or scarcely longer than broad. Eyes often very small.
- 431(432) Ocelli and wings wanting. ....  
..... **Nesothrips Kirk. (=Oedemothrips Bagn.)** <sup>(22)</sup>
- 432(431) Ocelli always present.
- 433(434) Length 4.5 mm. .... **cf. Holothrips Karny**
- 434(433) Smaller.
- 435(438) Antennae elongate.
- 436(437) Head scarcely longer than prothorax. Fore tarsi unarmed .....  
..... **Gymnothrips Karny**
- 437(436) Head distinctly longer than prothorax. Fore tarsi at least in the male with tooth. Postoculars very close to eyes .....  
..... **Neosmerinthothrips Schmutz**
- 438(435) Antennae short and stout, joints 7 and 8 united, 4 to 7 with short pedicel.
- 439(440) Postocular and prothoracic setae short and stout, their tips dilated  
Fore tarsi with a short, stout tooth in both sexes. Alate .....  
..... **Neoecidothrips Bagn.**
- 440(439) Postocular and pronotal setae long, blunt. Fore tarsi not armed in the female. Winged form yet unknown ... **cf. Syncerothrips Hood**
- 441(407) Tube 1.4 times as long as head, ribbed longitudinally .....  
..... **Acallurothrips Bagn.**
- 442(406) Tube only about half as long as head, if longer, provided with longitudinal furrows.
- 443(444) Tube without sculpture. Tender forms. Tube half as long as head. Antennals 7 and 8 somewhat united. Ocelli wanting .....  
..... **cf. Apterygothrips Pries.**

(22) *Oedemothrips ceylonicus* Karny belongs to *Neosmerinthothrips*; *Oc. propinquus* Bagn. ✓  
to *Bolothrips*.

- 444(443) Tube with longitudinal striae or furrows, about one-third shorter than head. Stouter forms.
- 445(446) Head about rectangular, cheeks straight. Pronotum distinctly longer than head ..... **cf. Barythrips Hood and Will.**
- 446(445) Head with cheeks converging posteriorly, arched. Pronotum distinctly shorter than head ..... **cf. Neosmerinthothrips Schmutz**
- 447(388) Antennae 6- or 7-jointed.
- 448(449) Antennae 6-jointed. Very small forms with short antennae, small joint 3; wingless ..... **cf. Priesneriella Hood**
- 449(448) Antennae 7-jointed.
- 450(451) Eyes much protruding, head constricted behind them. Body with polygonal reticulation. Head with coarse transversal striation ..... **Glyptothrips Hood**
- 451(450) Eyes not protruding. Head not constricted behind eyes.
- 452(453) Head reticulate dorsally. Antennals 7 and 8 only separated by a fine suture. Tergites of abdomen with peculiar sculptures; tergites II to VII with forked processes, bearing long, inwardly directed bristles ..... **Dactylothrips Bagn.**
- 453(552) Head without reticulation. Abdomen without peculiar processes.
- 454(461) Ocelli present.
- 455(456) Fore femora strongly incrassate, more than twice as long as tibiae, fore tarsi unarmed ..... **cf. Nesothrips Kirk.**
- 456(455) Fore femora not so heavy. Sometimes an incomplete suture between antennals 7 and 8.
- 457(460) Fore tarsi with tooth in both sexes <sup>(23)</sup>.
- 458(459) Postocular and prothoracic bristles knobbed ..... **Symphyothrips Hood and Will.**
- 459(458) Postocular and prothoracic bristles pointed ..... **Diplochelaethrips Moul. (Females)**
- 460(457) Fore tarsi unarmed. Suture between joints 7 and 8 present. Head longer than prothorax ..... **cf. Syncerothrips Hood**
- 461(454) Ocelli wanting. Wings reduced or wanting.
- 462(465) Head with four pairs of knobbed bristles.
- 463(464) Head longer than broad ..... **Bryothrips Pries.**
- 464(463) Head as long as broad ..... **Allothrips Hood**
- 465(462) Head with one pair of pointed postocular bristles.
- 466(467) Tarsi with stout tooth, which is shaped as in *Watsoniella*. (Wings fully developed in the female) ..... **Diplochelaethrips Moul. (males)**

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(23) The genus *Teuchothrips* should also be compared.

- 467(466) Wings and tarsal tooth wanting in the female ..... **Parallothrips Hood**
- 468(338) Fore tibiae with a tooth, at apex within, or in basal third, or interior margin with a series of conspicuous bristle-bearing tubercles
- 469(470, 471) Fore tibiae with a series of tubercles at inner margin ..... **cf. Tylothrips Hood**
- 470(469, 471) Fore tibiae with a tooth or tubercle in basal third within ..... **cf. Hoplandrothrips Hood (males)**
- 471(470, 469) Fore tibiae apically with small or large tooth.
- 472(473) Prothorax more than twice as long, and three to four times as broad as head. In lateral aspect, a beak-like projection on frons between eyes ..... **Eurynothrips Bagn.**
- 473(472) No beak-shaped projection on under side of head.
- 474(489) Head less than twice as long as broad.
- 475(488) Antennal joint 1 decidedly shorter than 2.
- 476(487) Fore wings not narrowed in the middle, or wings wanting.
- 477(480) Areola of joint 2 between base and middle.
- 478(479) Fore femora with stout basal tooth, and with a slight projection at apex within. Tube very short and thick ..... **Dunatothrips Moul.**
- 479(478) Fore femora without long basal tooth. Tube not unusually heavy... **cf. Plectrothrips Hood**
- 480(477) Areola of joint 2 between middle and apex.
- 481(482) Fore femora strongly enlarged, with a series of teeth within ..... **Thaumatothrips Karny**
- 482(481) Fore femora without teeth.
- 483(484) Fore femora much enlarged (female), fore tibiae very short and stout, on outer margin shorter than tarsi, inclusive of tooth, with triangular tooth at apex. Fore tarsi with long, dagger-like straight tooth. Eyes very large. Head strongly tapering towards base. Tube abruptly constricted at apex ..... **Choleothrips Moul.**
- 484(483) Fore tibiae much longer than tarsi, or tarsi unarmed. Tube not constricted at extreme tip.
- 485(486) Tarsi armed with a conspicuous tooth. Fore tibiae with small tooth ..... **cf. Hoplothrips subg. Odontoplothrips Pries.**
- 486(485) Tarsi unarmed, but with claw. Fore tibiae with long, pointed, hook-like tooth. Eyes large, not protruding, cheeks evenly, strongly convex ..... **Myopothrips Pries.**
- 487(476) Fore wings constricted at middle ..... **cf. Podothrips Hood**
- 488(475) Joint 1 of antennae as long as, or longer than, 2 and much stouter. **cf. Hoplothrips subg. Odontoplothrips Pries.; cf. Agnostochthona Kirk (24)**

(24) Description insufficient, examination of types necessary.

- 489(474) Head twice as long as broad or even longer.  
 490(495) Head about twice as long as broad.  
 491(494) Antennae 8-segmented. Unicolorous.  
 492(493) Tube about as long as head. Claws of fore tarsi very stout, longer than tarsi. Fore tibiae exceptionally short and broad, about 1.5 times as long as broad ..... **Onychothrips Karny**  
 493(492) Tube about half as long as head. Fore tarsi nearly as long as, or even longer than, the claws. Fore tibiae not exceptionally short, about three times as long as broad .....  
 ..... **Oncothrips Karny (syn. Kladothrips Bagn. nec Frogg.)**  
 494(491) Antennae 7-segmented. Black, pterothorax and abdominal segment I yellow ..... **Kladothrips Frogg.**  
 495(490) Head more than twice as long as broad, cheeks tapering from eyes towards base ..... **Grypothrips Karny**  
 496(337) Head distinctly longer than pronotum.  
 497(737) Antennae not exceptionally long and slender, without ventral prolongations of distal joints. Head rarely more than twice as long as broad. Cheeks more or less evenly wide, or with a small notch (v. p. 102).  
 498(499) Intermediate antennal joints with numerous sense-cones, 3 and 4 with 6 or 7 cones each; antennae very thick, with clubbed joints, moniliform. Areola of joint 2 between base and middle .....  
 ..... **Streptothrips Pries.**  
 499(498) Antennal joints 3 and 4 with less than 6 sense-cones. Antennae not exceptionally thick, joint 3 never so broad as the fore tibia.  
 500(509) Fore femora (at least in the male) with at least one stout tooth, or with a blunt hump within <sup>(25)</sup>.  
 501(502) Fore tarsi with two to three, middle and hind tarsi with one hook. Intermediate antennal joints spherical, terminals slender, 8 longest. Tube heavy ..... **Mastigothrips Pries.**  
 502(501) Fore tarsi with at most one, middle and hind tibiae without tooth or hook.  
 503(506) Tooth of fore femora present in both sexes <sup>(26)</sup>.  
 504(505) Antennae somewhat shorter than head, the latter narrow, abruptly constricted behind eyes, cheeks nearly parallel-sided, mouth-cone short. Legs very stout, fore femora with a series of strong teeth, fore tibiae with a series of tubercles fitting in between the femoral teeth ..... **Veerabahuthrips Ram.**

<sup>(25)</sup> cf. *Rhaebothrips* Karny.

<sup>(26)</sup> cf. *Euoplothrips* Bagn.



- 505(504) Antennae always longer than head. Body not so heavy .....  
 ..... **cf. Androthrips Karny**
- 506(503) Tooth of fore tibiae or fore femora well developed in the male only.
- 507(508) Fore tibiae (of male) with three conspicuous tubercles on inner margin. Body with dark markings ..... **cf. Aleurodothrips Frankl.**
- 508(507) Fore tibiae of male with a small tooth at base within, fore femora with two apical teeth .....  
 ..... **cf. Cryptaplothrips Pr. (ædymerous males)**
- 509(500) Fore femora unarmed in both sexes, but sometimes enlarged.
- 510(527) Fore tibiae with a tooth of varying size, or a scale-like projection or with a series of bristle-bearing tubercles at inner margin.
- 511(512) Fore tibiae with a series of bristle-bearing tubercles. Head notched behind eyes, front ocellus placed on a conical hump. Fore tarsi armed. Prothoracic bristles long, knobbed. Sense-cones very long, slender. Three terminal antennal joints united to a club, but joints not fused together. Mouth-cone short ..... **Tylothrips Hood**
- 512(511) Fore tibiae with one or more tooth-like excrescences, without bristle-bearing warts.
- 513(514) Wings narrow, tapering towards apex, about as in *Mesothrips* Zimm. Tooth on tip of fore tibiae very short, blunt (female) .....  
 ..... **cf. Glenothrips Pries.**
- 514(513) Wings broad, of even width throughout.
- 515(522) Tooth of fore tibiae small, hump-like.
- 516(519) Fore femora incrassate in both sexes. Fore tarsi with stout tooth (female). Head slender.
- 517(518) Habitus of *Hoplothrips* ..... **cf. Odontoplothrips Pries.**
- 518(517) Habitus of *Gynaikothrips* ..... **Mallothrips Ram.**
- 519(516) Fore femora not, or only in the male, enlarged. Fore tarsi of female without tooth. Habitus of *Cryptothrips*.
- 520(521) Antennae 7-segmented. Very large forms with long head. Fore margin and median line of pronotum strongly thickened .....  
 ..... **Paraerypthrips Moul.**
- 521(520) Antennae 8-segmented. Eyes often produced on under side of head.  
 ..... **cf. Bolothrips Pries**
- 522(515) Tooth of fore tibiae large and pointed.
- 523(524) Tibial tooth smaller, developed in the male only, which has fore femora strongly enlarged, fore tarsi with long, pointed tooth. Fore tarsi of female with stout tooth .....  
 ..... **cf. Odontoplothrips; cf. Agnostochthona Kirk. (27)**

(27) Description insufficient; a tarsal tooth might have been mistaken by a tibial tooth.

- 524(523) Tibial tooth large, beak-like, in both sexes. Fore tarsi (female) without tooth, but claw present. Cheeks strongly arched, eyes large.
- 525(526) Head not produced in front. Abdomen normal. Tarsi (female) without tooth, but with conspicuous claw ..... **cf. Myopothrips Pries.**
- 526(525) Head distinctly produced in front of eyes. Abdomen very broad and heavy. Tarsi (male) with a strong, curved tooth at apex of segment 1. .... **cf. Sporothrips Hood**
- 527(510) Fore tibiae unarmed, at most slightly widened at extreme apex or obliquely truncate at apical margin, so that the interior angle appears pointed.
- 528(541) Head broader than long.
- 529(530) Antennal joint 5 with projection. (fossil) ..... **cf. Schlechtendalia Bagn.**
- 530(529) Antennal 5 simple.
- 531(532) Prothoracic bristles very long, knobbed. Antennae 7-jointed. Tube only 1.6 times as long as wide, incrassate at base. Head sometimes much narrowed towards base. *Eyes large* ..... **Trichinothrips Bagn. (28)**
- 532(531) Bristles, if long, not distinctly knobbed, or else otherwise.
- 533(534) Bristles *short*, knobbed. (fossil) ..... **Cephenothrips Pries.**
- 534(533) Bristles not short and knobbed.
- 535(536) Antennae 6-segmented. Tube about as long as wide, of about triangular outline. Wings wanting ..... **Pygidiotrips Hood**
- 536(535) Antennae 8-segmented.
- 537(538) Areola of joint 2 placed near base. Joint 8 fine, fusiform. Fore tarsi toothed ..... **cf. Hammatotrips Pries.**
- 538(537) Areola of joint 2 in normal position, i.e., between middle and apex.
- 539(540) Antennal 8 somewhat constricted at base. Wings reduced, or, when fully developed, without double-fringe. Tube abruptly constricted at apex ..... **Gastrothrips Hood**
- 540(539) Antennal 8 not or indistinctly constricted at base. Wings with double fringe, if fully developed, but sometimes not fully developed (hemimacropterous) and without double-fringe. Tube not constricted apically, sometimes heavy and somewhat rugose ..... **Neosmerinthotrips Schmutz**
- 541(528) Head not broader than long.
- 542(574) Head not or scarcely longer than broad, but longer than pronotum.
- 543(557a) Wings reduced or wanting.
- 544(548) Tube long.

(28) If antennae 8-jointed, two epimeral bristles present, cf. *Eurhynchotrips* Bagn., s.str.

- 545(546, 547) Antennae 6-segmented. Tube very short and heavy, as long as broad, almost triangular in outline ..... **cf. Pygidiothrips Hood**
- 546(545, 547) Antennae 7-segmented ..... **cf. Diopsothrips Hood**
- 547(546, 545) Antennae 8-segmented (fossil) ..... **cf. Proleuwenia Pries.**
- 548(544) Tube shorter than head. Ocelli sometimes wanting.
- 549(550) Body with white mesodermal pigment, prothorax white. Antennae 7-segmented, joint 7 much narrower than 6 ..... **Idiothrips Faure**
- 550(549) Body without white pigment.
- 551(556, 557) Antennae 8-segmented.
- 552(553) Ocelli wanting ..... **Hypothesis Pries**
- 553(552) Ocelli present. Wings reduced or wanting.
- 554(555) Head very little produced in front. Prothorax very short. Fore tarsi with tooth at apex of first segment ..... **Metriothrips Hood**
- 555(554) Head not produced. Prothorax heavy ..... **cf. Hoplothrips Serv.**
- 556(551, 557) Antennae 7-segmented, 7 from 8 separated by a fine suture...  
..... **Syncerothrips Hood**
- 557(556, 551) Antennae 6-segmented ..... **Priesneriella Hood**
- 557a(543) Wings fully developed.
- 558(559) Antennae thick, moniliform, placed on a short process of head, like in *Chirothrips* ..... **Margaritothrips Pries.**
- 559(558) Antennae normal.
- 560(563) Wings without double-fringe.
- 561(562) Eyes small. Antennae 8-segmented ..... **cf. Gastrothrips Hood**
- 562(561) Eyes normal. Antennae 7-segmented. Tube longitudinally ribbed...  
..... **Diopsothrips Hood**
- 563(560) Wings with double-fringe. Eyes often large.
- 564(565) Fore legs unarmed. Body tender, head strongly narrowed towards base. Habitus liothripoid ..... **Litotetothrips Pries.**
- 565(564) Fore legs at least in the male with tarsal tooth, if not, body stout, cheeks not so strongly arched.
- 566(567) Insertions of antennae very far apart ..... **Abiastothrips Pries.**
- 567(566) Insertions of antennae of normal distance <sup>(20)</sup>.
- 568(569) Fore legs strongly incrassate; fore tibiae at apex within produced into a small blunt tubercle, bearing a conspicuous bristle. Fore tarsal tooth very stout. Head elongate. Antennae for the greater part (joints 3-7) yellow. (Wings much shaded). Gall thrips .....  
..... **cf. Mallothrips Ram.**
- 569(568) Fore tibiae simple.

(<sup>20</sup>) Some species of *Cryptothrips* auctt. (nec Uzel) may belong to one of the four following genera.

- 570(571) Antennae more or less slender, wholly black, joint 8 sub-pedicellate. Head not reticulate. Fore tarsi in both sexes with conspicuous tooth. Living on herbs and grasses ..... **cf. Treherniella Wats.**
- 571(570) Antennae not wholly black, segment 8 usually not constricted at base, often closely united with 7. Tube as in *Liothrips*.
- 572(573) Fore tarsi with a strong tooth in both sexes. Head at least sub-reticulate. Major bristles of varying size and shape. Antennals 5 and 6 obliquely truncate. Sense-cones short ..... **Teuchothrips Hood**
- 573(572) Fore tarsi without tooth in both sexes, but with (subapical) claw sometimes protruding. Vertex at most subreticulate. Wings comparatively short and broad, as in *Teuchothrips*. Major bristles long, knobbed. Joint 7 not constricted basally ..... **Eothrips Hood** <sup>(30)</sup> (for *E. crassicornis* (Ka.) and *E. annulicornis* (Ka.)
- 574(542) Head decidedly longer than broad.
- 575(606) Antennae 6- or 7-segmented.
- 576(577) Antennae 6-segmented. Large forms with cheeks somewhat concave. .... **Gordylothrips Hood**
- 577(576) Antennae 7-segmented.
- 578(579) Eyes protruding. Body reticulate ..... **cf. Glyptothrips Hood.**
- 579(578) Eyes not protruding, though sometimes large.
- 580(595) Terminal antennal joint without suture.
- 581(584) Tube with longitudinal ribs, constricted apically.
- 582(583) Tube longer than head. A stout bristle on each side of first ocellus. .... **cf. Diopsithrips Hood**
- 583(582) Tube shorter than head. Head without conspicuous ocellar bristle. Pterothorax more than one-fourth longer than wide ..... **Zaliothrips Hood**
- 584(581) Tube normal, without ribs.
- 585(586) Head with four pairs of stout dorsal bristles. Fore tarsi unarmed in the female. Wings and ocelli wanting ..... **Bryoithrips Pries.**
- 586(585) Head with one or two pairs of major bristles.
- 587(588) Wings and ocelli wanting. Fore tarsi armed in the male only. Head large. Two pairs of bristles on vertex (one postocular). Antennal 3 small, distal joints stout ..... **Parallothrips Hood**
- 588(587) Wings and ocelli present.
- 589(592) Cheeks almost straight.
- 590(591) Fore tarsi with tooth. Fore tibiae unarmed. Prothorax normal. Fore femora with long interior sub-basal bristle ..... **Heptathrips Moul.**

<sup>(30)</sup> This genus needs revision, as most species described under it belong either to *Rhynchothrips*, *Teuchothrips*, *Eugynothrips* or elsewhere.

- 591(590) Fore tarsi unarmed, but fore tibiae at apex within with a very small tooth. Fore margin and median line of pronotum with strong endothoracic thickening. Fore femora with long sub-median exterior seta ..... **Paracryptothrips Moul.**
- 592(589) Cheeks first widened behind eyes, then constricted. Eyes narrow in dorsal aspect.
- 593(594) Antennal joints moderately slender, sense-cones very long, three on joint 3. Front ocellus between eyes, surpassed by the interantennal projection. Eyes oval, in dorsal view ..... **Ischnothrips Moul.**
- 594(593) Antennal joints 3 to 6 very slender. Front ocellus surpassing interantennal projection. Eyes only narrowly visible in dorsal aspect...  
..... **cf. Polyphemothrips Schmutz**
- 595(580) Antennae between joint 7 and 8 with a more or less complete suture.
- 596(597) Tergum of abdomen with conspicuous dentiform and other sculptures. Head with net-like sculpture. Fore legs short and stout .....  
..... **cf. Dactylothrips Bagn.**
- 597(596) Not with these sculptures.
- 598(599) Tube ribbed longitudinally ..... **Lathrobiothrips Hood**
- 599(598) Tube without such ribs.
- 600(601) Eyes small, obliquely directed forward, not attaining sides of head. Antennal 3 with two sense-cones. Fore tarsi armed in both sexes. Postocular and prothoracic setae pointed .....  
..... **Diplochelaethrips Moul.**
- 601(600) Eyes reaching sides of head.
- 602(603) Head 1.5 times (female) to twice (male) as long as broad. Habitus of *Compsothrips*. Sense-cones long and slender, three on joint 3. Bristles pointed ..... **cf. Ischnothrips Moul.**
- 603(602) Head shorter.
- 604(605) Fore tarsi of female unarmed. Antennal 3 with two sense-cones. Head 1.3 to 1.4 times as long as broad. Brachypterous form known only ..... **Syncerethrips Hood**
- 605(604) Fore tarsi armed in both sexes. Antennal 3 with three sense-cones. Wings as in *Cryptothrips*, with a long series of double-fringe hairs. Head 1.1 times as long as broad ..... **Panceratothrips Bagn.**
- 606(575) Antennae 8-segmented.
- 607(614) A conspicuous seta on either side near first ocellus.
- 608(609) Head shorter, prothorax normal ..... **Diceratothrips Bagn.**
- 609(608) Head longer. Prothorax deeply excavated at anterior margin.
- 610(611) Antennal 3 very long. Tube as long as head. Vertex without bristles behind eyes ..... **Tetraceratothrips Bagn.**



- 611(610) Antennal 3 shorter. Tube shorter than head. Head with bristles behind eyes. Tube hairy.
- 612(613) Postocular bristles equal to several genal pairs, arising from low prominences. Tube 0.9 as long as head. Antennae relatively short and stout ..... **Ceuthothrips Hood**
- 613(612) Cheeks smooth with a pair of long lateral bristles behind eyes. Antennae slender, joints 4 to 7 prolonged on ventral surface at apex ..... **Phaulothrips Hood**
- 614(607) At the sides of the front ocellus no major bristles, or ocelli wanting.
- 615(616) Long postocellar or interocellar bristles ..... **Dichaetothrips Hood**
- 616(615) No long setae behind posterior ocelli (these bristles should not be confused with postoculars), they are rarely moderately long, in this case front ocellus on a hump, and tarsi with large claw, without tooth.
- 617(618) Eyes unusually large, almost touching each other. Tube of normal length ..... **Holopothrips Hood**
- 618(617) Eyes smaller, though their distance sometimes less than width of eye. If the eyes are large, the tube is unusually long, much longer than the long head.
- 619(734) Antennal joint 6 distinctly separated from 7 (v. p. 102).
- 620(629) Front ocellus surpassing interantennal projection.
- 621(624) Front ocellus placed on top of a long, conical process.
- 622(623) Antennae long, inserted below ocellar process, front ocellus not visible from above. Tarsi unarmed. Legs long. .... **Goryphothrips Karny**
- 623(622) Antennae short. Front ocellus visible in dorsal aspect. Legs short, fore tarsi with tooth. .... **Dimorphothrips Bagn.**
- 624(621) Front ocellus situated on the produced convexity that surpasses somewhat the interantennal projection.
- 625(628) Body large and heavy. Wings long and broad.
- 626(627) Wings broad, much widened posteriorly. Double-fringe wanting. Fore tarsi with small tooth in female, large one in male, and with weak claw. .... **cf. Megeugynothrips Pries.**
- 627(626) Wings scarcely widened, normal, with double-fringe. Two pairs of stout postoculars. Fore tarsi with stout claw, without tooth. Bristle 2 of segment IX knobbed in the male. .... **Philothrips Pries.**
- 628(625) Body slender. Wings narrowed at middle. .... **cf. Leptothrips Hood**
- 629(620) Front ocellus in normal position, at most on a slight elevation that never surpasses the interantennal process, or ocelli wanting. Head sometimes produced in front of eyes. In rare cases, front ocellus from posterior ocelli somewhat farther apart than the latter from each other, but not surpassing process.

- 630(711) Fore femora, at least in the female, slender or normal, not much enlarged (v.p. 101).
- 631(632) Fore femora of male strongly arched, with concave, obtuse-angled interior margin (cf. *Terthrothrips* Ka.). ..... **Rhaebothrips Karny**
- 632(631) Fore femora with inner margin nearly straight.
- 633(634) Head little longer than broad. Length 4.5 mm. .... **Holothrips Karny**
- 634(633) Head distinctly longer than broad, or smaller forms.
- 635(636) Head produced in front of eyes into a long process. Wings and ocelli wanting. Pterothorax very short, about three times as broad as long. Antennal joints 7 and 8 closely united. .... **Emprosthiothrips Moul.**
- 636(635) Not these characters combined.
- 637(638) Head in front of eyes, above interantennal projection, with a short hump, divided by a furrow. Ocelli wanting. .... **Goëthrips Pries.**
- 638(637) Head without such a small, furrowed hump.
- 639(662) Wings either narrowed in the middle, or reduced or wanting.
- 640(641) Eyes large. Prothoracic bristles long. Antennae very long and slender, joint 8 thin, somewhat narrowed at base. Mouth-cone slender. Body vividly coloured. .... **cf. Baphothrips Pries.**
- 641(640) Eyes small; if large, mouth-cone broadly rounded, or otherwise differing from the above characters.
- 642(647) Antennal 8 constricted at base, sharply separated from 7.
- 643(644) A sharp notch behind eyes. Body with net-like structure. ... **cf. 671**
- 644(643) No small notch behind eyes. Body not reticulate. *Cryptothrips*-like forms.
- 645(646) Head little, if any, longer than wide. Inner margin of eyes angular behind. Intermediate antennal joints produced beneath. .... **cf. Gastrothrips Hood**
- 646(645) Head distinctly elongate. Eyes rounded posteriorly. Antennal joints normal. .... **cf. Cryptaplothrips Pries.**
- 647(642) Antennal joint 8 broadly attached to 7, or pedicellate and head without notch behind eyes. Body smooth, without reticulation.
- 648(653) Ocelli wanting. Bristles pointed.
- 649(650) Eyes consisting of few large ommata. Mouth cone large. Fore tarsi unarmed. .... **Pseudocryptothrips Pries.**
- 650(649) Eyes composed of numerous facets which are little convex. Mouth cone small. Fore tarsi armed in both sexes, shape of tarsal tooth as in *Watsoniella*.
- 651(652) Antennal joint 3 without subbasal ring, normal. .... **Apterygothrips Pries.**

- 652(651) Antennal joint 3 with a subbasal thickening. Antennal joint 7 longest. .... **cf. Agrothrips Jacot-Guill.**
- 653(648) Ocelli developed.
- 654(655) Antennal 3 with subbasal ring. .... **cf. Hadothrips Pries.**
- 655(654) Antennal 3 normal.
- 656(657) Prothoracic bristles short, knobbed. Antennae only 1.3 times as long as head. Habitus of *Cephalothrips*. .... **Gnophothrips Hood and Will.**
- 657(656) Major bristles pointed, seldom *long* and pointed.
- 658(659) Postoculars placed close behind eyes, less far apart from hind margin of eyes than half of dorsal length of eyes. Eyes sometimes prolonged posteriorly on under side of head. .... **Bolothrips Pries. (cf. Rhaebothrips Ka.)**
- 659(658) Postoculars farther distant from eyes.
- 660(661) Fore tarsi of female unarmed. Antennal joints 3 to 6 normal. .... **Cryptothrips Uz.**
- 661(660) Fore tarsi armed in both sexes. Antennal joints 3 to 6 distinctly pedicellate. .... **Metriothrips Hood**
- 662(639) Wings fully developed, parallel-sided.
- 663(680) Body, or at least the head above, with net-like structure.
- 664(665) Wings with double-fringe hairs. Antennal joints 7 and 8 united. ... **Kellyia Bagn.**
- 665(664) Wings without double-fringe.
- 666(667) Antennae extremely slender, 3.3 times as long as head. .... **Terthrothrips Karny**
- 667(666) Antennae at most 2.5 times as long as head.
- 668(675) Tube shorter than head or little longer.
- 669(670) Front ocellus situated between antennal pits. Postoculars longer than the eye. Head much widened posteriorly. .... **Iniothrips John**
- 670(669) Front ocellus terminating on a level with fore margin of eyes. Postoculars usually shorter than the eye. Head about parallel-sided, or cheeks slightly arched.
- 671(672) Postoculars and antero-marginals of pronotum very small. All femora slender, evenly wide, somewhat curved, rugose. Tarsi unarmed. ... **Sagenothrips Pries.**
- 672(671) Postocular and prothoracic bristles well developed.
- 673(674) Fore-tarsi in both sexes with conspicuous, hook-like tooth. Vertex with one pair of postoculars, these, as all major bristles, spoon-shaped, i.e., bent, clubbed and rough at tip. .... **Mystrothrips nov. (typ. gen. Sagenothrips dammermani Pries.), cf. Malacothrips Hinds.**
- 674(673) Fore tarsi of male toothed, of female unarmed (as in *Cryptothrips*).

- Two pairs of stout, knobbed postoculars and one pair of bristles between eyes. ....
- ..... **Faureothrips nov. (typ. gen. *Cryptothrips reticulatus* Tryb.)** *R*
- 675(668) Tube at least 1.3 times as long as head.
- 676(677) Antennal joints without stout, knobbed bristles. Solely exterior prothoracic bristles conspicuous, thick, blunt. Head much widened posteriorly. Antennae slender (easily broken off). Abdominal segments with lateral spines. Suggesting *Leeuwenia*. ....
- ..... **Mametiella nov. (typ. gen. *M. ardisiae* n.sp.)** ✓
- 677(676) Some antennal joints with knobbed bristles.
- 678(679) Antennal joints 1, 3, 4 and 5 with stout, knobbed bristles. Prothoracic bristles knobbed. Head somewhat narrowed behind. ....
- ..... **Zeugmatothrips Pries**
- 679(678) Antennal joints 3 and 4 each with three, joint 5 with one *very fine* knobbed bristle. Prothoracic bristles pointed. Antennal joints with reticulation. .... **Orthothrips Pries.**
- 680(663) Body without conspicuous reticulation; head at most with fine anastomosing transversal lines or very fine granulae.
- 681(698) Fore femora slender, or little enlarged in both sexes.
- 682(683) Wingless. .... **males of *Bolothrips* Pr., *Cryptothrips* Uz.**
- 683(682) Macropterous.
- 684(697) Cheeks without conspicuous pair of spines.
- 685(686) Head short and broad, much narrowed towards base. Femora at least apically more or less abruptly pale, middle and hind femora often yellowish at entire inner margin. ....
- ..... **Neosmerinthothrips Schmutz**
- 686(685) Head longer, femora not paler than tibiae.
- 687(690) Fore tarsi unarmed. Tube not parallel-sided.
- 688(689) Tube very long (cf. *Leeuwenia*). Head widened posteriorly, its rough surface with numerous short, stout bristles. Wings narrow. Sides of abdomen with rigid bristles. Antennae filiform. ....
- ..... **cf. *Mametiella* Pr.**
- 689(688) Tube normal. Habitus of *Liothrips*. .... **Smerinthothrips Schmutz**
- 690(687) Fore tarsi usually armed. One to two pairs of postoculars.
- 691(696) Head little or not constricted behind eyes.
- 692(693) Fore tarsi with stout tooth. Cephalic bristles short. Two pairs of epimeral bristles. .... **Parateuchothrips Moul.**
- 693(692) Fore tarsi with smaller tooth. At least some cephalic bristles long.
- 694(695) One to two pairs of epimeral bristles. Ocellar hump, between posterior ocelli, reticulate (in all species). Two pairs of postoculars, one of which may be small. Tube long. ....
- ..... **Gynaikothrips Zimm. (sensu Bagn. 1928, Pries. 1939)**

- 695(694) One pair of epimeral bristles. Head large, slightly narrowed posteriorly. One pointed pair of postoculars close behind eyes. ....  
..... **Mathetethrips Moul.**
- 696(691) Head strongly constricted behind eyes. Tube short, conical, broad at base. Wings without double-fringe. Bristles strongly knobbed. Tarsal tooth stout, curved. Eyes roundish. Antennae somewhat moniliform, joint 7 very moderately long, 8 not constricted at base. ...  
..... **Zuluella Jacot-Guill.**
- 697(684) Cheeks in basal third with a spine on either side. ....  
..... **Ramakrishnaiella Karny**
- 698(681) Fore femora of male enlarged.
- 699(700) Sense-cones of antennae unusually long and slender. Habitus of *Smerinthothrips*. Many species. .... **Eugynothrips Pries.**
- 700(699) Sense-cones normal.
- 701(704) Postoculars close to hind margin of eyes.
- 702(703) Head widened towards base. Tube very broad at base. Eyes narrow, in dorsal aspect, visible only near fore margin of head. ....  
..... **cf. Mathetethrips Moul.**
- 703(702) Head often narrowed towards base. .... **Bolothrips Pries.**  
a(b) Eyes much prolonged on lower surface. ....  
..... **Subg. Bolothrips s.str.**  
b(a) Eyes not or little longer on lower than on upper surface.  
c(d) Ocelli in apterous forms usually wanting. Postoculars small. Postero-marginal prothoracic setae not greatly reduced in size.  
..... **Subg. Botanothrips Hood**  
d(c) Ocelli in apterous forms small. Postoculars well developed. ...  
..... **Subg. Carientothrips Moul.**
- 704(701) Postoculars from hind margin of eyes distant for more than half the length of the latter.
- 705(708) Front ocellus not protruding. Antennae not so long and slender. Fore tarsi of female unarmed.
- 706(707) Head very long, about rectangular. Bark inhabiting species. ....  
..... **Cryptothrips Uz.**
- 707(706) Head normal. Sense-cones very slender. Gall thrips. ....  
..... **cf. Eugynothrips Pries.**
- 708(705) Front ocellus on a small prominence. Antennae slender. Fore tarsi of female with small tooth. Gall producers.
- 709(710) Wings heavy, clear, without double-fringe. One pair of epimeral prothoracic bristles. .... **Megeugynothrips Pries.**
- 710(709) Fore wing with double-fringe hairs. One or two pairs of epimeral bristles. .... **cf. Gynaikothrips Zimm.**



- 711(630) Fore femora enlarged in both sexes. (In rare cases more strongly enlarged in the female, usually, however, vice-versa).
- 712(731) Antennal joints 7 and 8 separated; 8 often broadest at base, but always distinctly narrower than 7 at apex.
- 713(730) Labrum blunt.
- 714(727) Fore femora with normal apical margin.
- 715(722) Head much longer than broad.
- 716(719) Three bristles at each posterior angle of prothorax. Head with two pairs of postoculars.
- 717(718) Tube long, usually nearly parallel sided for its greater part. .... **cf. Gynaikothrips Zimm.**
- 718(717) Tube short. .... **Sunaitiothrips Moul.**
- 719(716) Chaetotaxy of prothorax and vertex not as indicated above. <sup>(31)</sup>.
- 720(721) Sides of head granulated, with fine setae. Fore tarsi with two teeth (sex unknown), one of them may equal claw. Tube short and stout. .... **cf. Titanothrips Karny**
- 721(720) Cheeks with some spines. Fore tarsi with one tooth in both sexes. Tube long and slender, about as long as head. .... **cf. Scotothrips Pries.**
- 722(715) Head shorter.
- 723(724) Antennae wholly black, joint 8 sub-pedicellate. Turf inhabiting species. .... **cf. Treherniella Wats.**
- 724(723) Antennae not wholly black.
- 725(726) Eyes comparatively small. Prothorax heavy. Fore legs usually much enlarged. Wings often reduced or wanting. Turf or bark inhabiting species. .... **cf. Hoplothrips Serv.**
- 726(725) Eyes normal. Prothorax not exceptionally heavy. Fore femora less incrassate. Sense-cones very slender. Wings always present. .... **cf. Eugynothrips Pries.**
- 727(714) Fore femora with apical exterior margin incrassate, about as in most *Chirothrips*.
- 728(729) Front ocellus comparatively far distant from posterior ocelli. Fore tarsi with normal tooth and claw. Middle and hind tibiae with conspicuous pre-apical seta. Central plate of tergite I regularly triangular. .... **Thorybothrips Pries.**
- 729(728) Front ocellus in normal position. Fore tarsi with tooth, and besides, with large, bifid claw. Middle and hind tibiae without conspicuous pre-apical setae. Central plate of tergite I narrow, elongate, nearly parallel-sided. .... **Amothrips Pries.**

<sup>(31)</sup> Some species, erroneously described under *Mesothrips*, may also come in here.

- 730(713) Labrum surpassing mouth-cone. Bristles on abdominal segment IX surpassing tube. Tarsi of male with large, of female with small tooth. Large forms. .... **cf. Megeugynothrips Pries.**
- 731(712) Antennal joints 7 and 8 broadly united.
- 732(733) Tube with longitudinal keels. .... **Coenothrips Bagn.** <sup>(32)</sup>
- 733(732) Tube without keels. .... **cf. Mathetethrips Moul.**
- 734(619) The three apical antennal joints united; forming one unit.
- 735(736) Cheeks with bristle-bearing warts. Head constricted behind. Wings without double-fringe, or wanting. Body surface roughened. .... **Dermothrips Bagn.**
- 736(735) Cheeks smooth. Wings with double-fringe hairs. .... **cf. Kellyia Bagn.**
- 737(497) Antennae very long, or some joints produced tooth-like below. Head more than twice as long as broad, usually somewhat constricted behind eyes and before posterior margin. Often apterous or brachypterous, and somewhat ant-like.
- 738(750) Joints 5 and 6 of antennae with a triangular process which, in lateral aspect, appears as a short tooth that surpasses somewhat base of following joint.
- 739(745) Wings entirely wanting
- 740(741) Mouth-cone tapering towards apex. Cheeks nearly parallel. .... **Leptogastrothrips Tryb.**
- 741(740) Mouth-cone broadly rounded. Cheeks convex, at least in basal third
- 742 Vacat.
- 743(744) Head with a short, conical process that surpasses somewhat inter-antennal projection. Prothorax broader than long. Mesothorax without dorsal hump or cone. (Antennals 4 and 5 yellow in basal portion). Fore femora of male nearly angularly emarginated within. ... **Compsothrips Reut.**
- 744(743) Head, in front, without conical process, slightly emarginated between antennal cavities. Prothorax sometimes as long as broad, and mesothorax with conical elevation. .... **Oedaleothrips Hood**
- 745(739) Wings fully developed or reduced.
- 746(749) Head without anterior dorsal prominence, only with spines or bristles.
- 747(748) Cheeks with some spines. Antennae much longer than head. .... **Lophothrips Karny**
- 748(747) Cheeks without prominent spines. Antennae stout, about as long as head, joint 3 stout. .... **cf. Titanothrips Karny**

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<sup>(32)</sup> cf. *Lathrobiothrips* Hood; cf. *Kellyia* Bagn. (dorsal surface of head reticulate; head 1.5 times as long as broad; antennal 3 very long; bristles knobbed).

- 749(746) Head in front, between antennae, with a bifid, horse-shoe-shaped process. .... **cf. Kaleidothrips Kelly**
- 750(738) Antennal joints without ventral projections.
- 751(766) Tube as long as head or shorter. Near front ocellus usually a pair of long, stout bristles or spines, or one pair of blunt humps.
- 752(759) Antennae 8-segmented.
- 753(756) Tube shorter than head.
- 754(755) In front of anterior ocellus, two very long, forwardly directed setae. .... **Ophidothrips Schmutz**
- 755(754) No long bristles in front of ocelli. .... **cf. Titanothrips Karny**
- 756(753) Tube as long as head.
- 757(758) Near front ocellus a moderately long, stout, outwardly directed spine. .... **Anactinothrips Bagn.**
- 758(757) Head above with two rounded, bristle-bearing horse-shoe-shaped projections, which surround the front ocellus. .... **Kaleidothrips Kelly**
- 759(752) Antennae 7- or 6-segmented.
- 760(765) Antennae 7-segmented.
- 761(764) Eyes smaller. Head much widened behind eyes, constricted near base. Antennal joints club-shaped apically.
- 762(763) Eyes not extending onto sides of head, and with about three enlarged facets dorsally. .... **Adelothrips Hood**
- 763(762) Eyes visible at sides of head. The latter constricted about middle. .... **cf. Polyphemothrips Schm.**
- 764(761) Eyes normal. Cheeks moderately arched. Antennae normal. .... **Ischnothrips Moulit.**
- 765(760) Antennae 6-segmented. .... **cf. Gordylothrips Hood**
- 766(751) Tube distinctly longer than head. No spines or bristles by front ocellus.
- 767(768) Sides of abdomen flattened, posterior angles of intermediate segments prolonged, more conspicuously in the male, and tipped with a stout spine. .... **Cercothrips Hood**
- 768(767) Sides of abdomen normal. .... **cf. Gigantothrips Zimm.**
- 769(141) Head, in lateral view, strongly convex dorsally, sometimes concave ventrally; cheeks narrowed towards base, if viewed from above.
- 770(771) Head compressed laterally, occupying more than one-fourth of the total length of the body; dorsal surface strongly arched, ventral surface nearly rectangularly excavated, in lateral aspect. .... **Egchocephalothrips Bagn.**
- 771(770) Ventral surface of head not or little concave.
- 772(773) Antennae 6-segmented. Cheeks set with fine spines. Front ocellus far apart from posterior ocelli. Antennae moderately long. .... **Gordylothrips Hood**

- 773(772) Antennae 7- to 8-segmented.
- 774(781) Large forms. Intermediate antennal joints long.
- 775(780) Antennae 7-segmented.
- 776(777) Tube longer than head. Sense-cones very long and slender. .... **Cleistothrips** Bagn.
- 777(776) Tube shorter than head. Sense-cones normal or slender.
- 778(779) Fore femora near base, and fore tibiae near apex within, with a low protuberance. .... **Oidanothrips** Moul.
- 779(778) Fore legs simple, only fore tarsi toothed. .... **ch. Adelothrips** Hood; **cf. Ischnothrips** Moul.
- 780(775) Antennae 8-segmented. Major bristles of body very long, hair-like. .... **Docessissophothrips** Bagn. <sup>(33)</sup>
- 781(774) Smaller forms. Antennal joints not so much differing in length from one another.
- 782(783) Antennae 8-segmented. .... **cf. Pygmaethrips** Karny
- 783(782) Antennae 7-segmented. .... **Stegothrips** Hood
- 784(134) Cheeks, usually all along, with more or less numerous, shorter or longer *spiniform* bristles or spines, at least with two pairs of them. They may be whitish, yellow or dark.
- 785(859) Fore femora without a series of teeth or stout spines or thorns within, sometimes with two teeth at apex.
- 786(789) Fore femora with two teeth at apex within, and fore tibiae with one small tooth about middle.
- 787(788) The female only has armed fore tibiae. .... **Hoplandrothrips** subg. **Gynoplothrips** nov. (typ. **Hoplandrothrips arrhenus** Jacot) R
- 788(787) The male only has armed fore tibiae. .... **cf. Hoplandrothrips** Hood
- 789(786) Fore femora unarmed, or with one stout tooth or hump near base or one hump before apex.
- 790(858) Fore coxae without horn.
- 791(792) Prothorax in front, laterally, with a small projecting plate. Head with a short process. Ante-ocellar bristles present. .... **Lamillothrips** Bagn.
- 792(791) Prothorax without such plate, sometimes, however, anterior angles dentate, or protruding tooth-like. .... **cf. Diceratothrips** Bagn.
- 793(794) Fore angles of mesothorax with two digitiform spines and some smaller ones nearby. Cheeks strongly arched. Head broader than long. .... **cf. Tetracanthothrips** Bagn.

(<sup>33</sup>) Somewhat convex head have : *Polyphemothrips* Schmutz, *Pristothrips* Hood, *Adelothrips* Hood, *Cratothrips* Pries., and *Oedaleothrips* Hood. Strongly convex head has *Hartwigia* Faure, related to *Oedaleothrips* (cf. 744), differing by the possession of wings; both genera have very short prothoracic bristles.

- 794(793) Mesothorax without such spines, but may possess a large, forked process.
- 795(796) Fore tibiae with a stout, conical projection at tip. Tibiae with tubercles at interior margin. Tarsal tooth large in both sexes. Only one or two pairs of dark spines before base of head. ....  
..... **cf. *Pristothrips* Hood**
- 796(795) Not these characters combined.
- 797(798) Tube only about half as long as head. .... **cf. *Trybomia* Karny**
- 798(797) Tube about as long as head or more elongate, or at least 0.65 of length of head.
- 799(800) Fore angles of mesothorax of male with a forked process. Antennal 3 for the greater part yellow, rest blackish, as all the remaining joints. .... ***Dinothrips* Bagn.**
- 800(799) Both sexes with unarmed anterior angles of mesothorax, in some cases only with small, backward directed tooth which is somewhat bent upward.
- 801(802) Fore angles of prothorax with 6-8 pale, rigid, very short spines. Cheeks unevenly sculptured, so that the yellow spines are nearly placed on warts. Apex of fore tibiae of male terminating in a tooth-like point. Fore tarsi armed in both sexes. ....  
..... ***Phasmothrips* Pries. <sup>(34)</sup>**
- 802(801) Fore angles of prothorax without these spines, or they are very weak and decumbent, bristle-like, dark.
- 803(806) Fore tibiae right before tip within with a pointed, claw-like tooth. Cheek spines short.
- 804(805) Head between eyes and antennal base not distinctly produced. Vertex with one pair of major bristles. Tube longer than head. ...  
..... ***Diaphorothrips* Karny**
- a(b) Postocellar bristles long, ante-ocellars small. ....  
..... **Subg. *Diaphorothrips*, s.str.**
- b(a) Postocellars small, ante-ocellars moderately long. ....  
..... **Subg. *Cnemidothrips* Pries.**
- 805(804) Head in front of eyes, towards antennal pits, distinctly produced. Cephalic bristles not very long. Tube not quite as long as head. ..  
..... ***Derothrips* Jacot-Guill. (males)**
- 806(803) Fore tibiae unarmed, sometimes somewhat widened at apex, but never tooth-like.
- 807(815) Wings wanting or reduced, at least in the male.

<sup>(34)</sup> Some species of *Gynaikothrips* Zimm., Bagn. have rudimentary spines at anterior angles of prothorax.



- 808(809,812) Fore femora much enlarged, their outer margin with short stout spines only at base. Tube much shorter than head. .... **Elaphridothrips Pries.**
- 809(808,812) Fore femora less enlarged, exterior margin with bristles only.
- 810(811) Behind posterior ocelli one pair of long setae, besides, two pairs of long, hair-like postoculars. Sides of abdomen with very long, somewhat wavy hairs. Antero-angular prothoracic setae very long, hair-like. .... **Polytrichothrips Pries.**
- 811(810) No exceptionally long, hair-like setae on head, prothorax or sides of abdomen. .... **cf. Derothrips Jacot-Guill. (females).**
- 812(809,808) Fore femora not enlarged.
- 813(814) Intermediate antennal joints much elongate, Tarsi simple in both sexes. (Males with tubular processes). Tube not costate. .... **cf. Megathrips Targ.-Tozz., (females)**
- 814(813) Intermediate antennal segments moderately elongate. Fore tarsi strongly armed in both sexes. Tube longitudinally costate. .... **Diplacothrips Hood**
- 815(807) Wings always developed.
- 816(831) On either side of front ocellus (in front of posterior ocelli) a long or conspicuous bristle.
- 817(822) Two pairs of postoculars, the posterior pair sometimes much smaller.
- 818(821) Fore femora of male without spines within.
- 819(820) Body, antennae and legs black. Cephalic cone scarcely developed. Anterior angles of pronotum with some small dark spines. .... **Machato'hrips Bagn. (males) (syn. Adiaphorothrips Bagn. nec auctt.)**
- 820(819) At least antennal joint 3 pale, in rare cases, antennae nearly black. Head-cone always recognizable, often long. Many species. .... **Elaphrothrips Buffa**
- 821(818) Fore femora, at least of male, irregularly set with short spine-like bristles within and without. Head-cone short, but well developed. ... **Hylothrips Pries.**
- 822(817) One pair of postocular bristles. No cephalic process, or it is extremely short.
- 823(824) Fore femora of male strongly curved, with broad concavity within .... **Campulothrips Moul. (cf. Rhaebothrips Karny)**
- 824(823) Fore femora without deep concavity at interior margin.
- 825(826) Cheeks strongly concave. Fore femora with teeth within .... **Eulophothrips Schmutz**
- 826(825) Cheeks not or slightly concave.
- 827(828) Postocular bristles short, not longer than genal bristles. Inter ocellars well developed .... **cf. Ceuthothrips Hood**

- 828(827) Postocular bristles very long.
- 829(830) Head very slightly produced in front of eyes. Tube conical, much narrowed towards apex. Antennae 3 to 6 partly yellow .....  
..... **cf. Diplacothrips Hood**
- 830(829) Head not produced, antennae black .....  
..... **Diceratothrips Bagn. (incl. subg. Endacnothrips Pries.)**
- 831(816) No long bristles by the median ocellus.
- 832(835) A pair of long setae between or behind posterior ocelli. Bristles on fore margin of prothorax short.
- 833(834) A pair of long bristles between posterior ocelli .....  
..... **cf. Campulothrips Moul.**
- 834(833) A pair of long bristles behind posterior ocelli .....  
..... **Dichaetothrips Hood**
- 835(832) Between or behind posterior ocelli no long accessory setae.
- 836(857) Wings normal, not unusually narrow.
- 837(838) Antennae 6-segmented. Cheeks somewhat concave .....  
..... **Cordylothrips Hood**
- 838(837) Antennae 7- to 8-segmented.
- 839(854) Wings not punctured or dotted.
- 840(841) Lateral abdominal bristles short, stout, spiniform .....  
..... **cf. Cercotrips Hood**
- 841(840) Lateral abdominal bristles normal, in some cases those on segment IX short and stout.
- 842(841) Cheeks not concave.
- 843(844) Body brownish yellow, gradually blackened towards apex of abdomen. .... **cf. Neosmerinthothrips Schm.**
- 844(843) Body black.
- 845(850) Mouth-cone broadly rounded.
- 846(847) Antennae wholly black. Genal spines very conspicuous.....  
..... **Scototrips Pries.**
- 847(846) Antennae at least partly yellow. Cheek spines weak.
- 848(849) One pair of epimeral prothoracic bristles. Wings without double-fringe ..... **cf. Megeugynothrips Pries.**
- 849(848) Two pairs of postero-angular (one or two epimeral) bristles. Wings with double-fringe hairs. ....  
..... **cf. Gynaikothrips Zimm.**
- 850(845) Mouth-cone long, pointed. Cheek spines weak.
- 851(842) Cheeks with two slight concavities on either side. Antennae 7-jointed.
- 852(853) Fore legs unarmed. Eyes narrow, viewed from above .....  
..... **cf. Polyphemothrips Schmutz**

- 853(852) Fore femora and fore tibiae with a hump within. Head strongly convex above. Eyes elongate ..... **cf. Oidanothrips Moulf.**
- 854(839) Wings punctured or dotted.
- 855(856) Tube more than twice the length of head. Bristles at sides of abdomen of peculiar shape, stout behind base, whence they are abruptly narrowed, elongate-lanceolate, hair-like ..... **Syringothrips Pries.**
- 856(855) Tube shorter, bristles normal ..... **cf. Gynaikothrips Zimm.**
- 857(836) Wings very narrow, evenly wide throughout. Tube longer than head. .... **Isopterothrips Bagn.**
- 858(790) Fore coxae with a hook-like or straight, conical horn. Fore tibiae before apex with a tooth in both sexes, sometimes fore femora, too, with large basal tooth ..... **Macrothrips Bagn.**
- 859(785) Fore femora at interior margin or at apex with a series of teeth or thorns; sometimes there are numerous, very small teeth or a group of thorns.
- 860(861) Fore femora exceptionally strongly enlarged, dilated into a tridentate plate, at apex within, fore tibiae shorter than breadth of femora, and formed like a crayfish-claw. Antennal joints 7 and 8 broadly united ..... **Carcinothrips Moulf.**
- 861(860) Fore femora and fore tibiae not transformed into a crayfish-claw
- 862(865) Teeth of fore femora large, slender, strobiliform, forming a series of dark chitinous protuberances.
- 863(864) Fore tibiae unarmed ..... **Machatothrips Bagn. (females)**
- 864(863) Fore tibiae with a series of teeth ..... **Pristothrips Hood**
- 865(862) Teeth of fore femora small, more like tubercles or spines, sometimes emerging from pores. Fore tarsi with stout tooth.
- 866(867) Fore tibiae with a blunt tooth at apex. Head not produced. Cheeks scarcely spiny. Teeth of fore femora consisting of (8-10) tubercle-like projections. Tube longer than head. Fore tibiae curved, roughened within. Vertex with one pair of long postoculars ..... **Ischyrothrips Schmutz (I. crassus Sch. only).**
- 867(866) Fore tibiae unarmed.
- 868(873) Head not produced in front, or with only one pair of long postoculars.
- 869(870) Cheeks concave ..... **Eulophothrips Schmutz**
- 870(869) Cheeks not concave.
- 871(872) Anterior angles of prothorax without short spines ..... **Diceratothrips Bagn.**
- 872(871) Anterior angles and fore margin, from angles to sternum, set with small black spines. Wings and habitus as in *Machatothrips*. Fore

femora of female with a series of very short triangular spines; male unknown, but most likely with femora unarmed, as in *Machatothrips* ..... **Cnestrothrips Pries.**

873(868) Head slightly produced in front, with two pairs of postoculars ...  
..... **Hyllothrips Pries.**

874 (50) Median ocellus from posterior ocelli mostly farther apart than the latter from each other. Head more or less produced in front, i.e., cephalic cone present. If the ocelli are reduced or wanting, the head is much produced (v. p. ).

875(876) Antennal joint 3 with numerous small, scale-like sense-cones .....  
..... **Zactinothrips Hood**

876(875) Joint 3 without small, scale-like sense-cones.

877(912) Abdominal segments II to VIII without tooth, often however, with spine-like or somewhat fringed bristles. Tube less than 5 times as long as segment IX.

878(897) Head not or little produced in front of eyes. Fore angles of prothorax and fore femora unarmed. Tube longer than segment IX.

879(880) Front ocellus on a conical hump. Antennae short to normal .....  
..... **cf. Dimorphothrips Bagn.**

880(879) Front ocellus not placed on a conical projection, or, if this character agrees, the antennae long and slender.

881(886) Antennal joints 1, 3, 4 and 5 with *very* stout, usually knobbed bristles.

882(885) Tube hairy.

883(884) Head short, with three pairs of stout, knobbed dorsal bristles. ....  
..... **Zeugmatothripoides Bagn.**

884(883) Head elongate, with two pairs of bristles, without cheek spines or with only a small one. .... **Zeugmatothrips Pries.**

885(882) Tube almost bare. Three pairs of stout, knobbed bristles on vertex.  
..... **Zeuglothrips Hood**

886(881) Antennae without stout, knobbed bristles, but often with fine, blunt bristles.

887(894) Cheeks without conspicuous spines; are any such spines present, the sides of the abdomen have also pairs of spine-like bristles. Tube very long and slender. Prothorax transversally elliptic.

888(893) Eyes not produced on lower surface.

889(892) Wings broad. Head not produced in front of eyes.

890(891) Ocellar cone not distinctly produced. Stout, blunt bristles on anterior angles of pronotum and on segment IX. Abdominal segments somewhat flattened laterally, and roughened (by very fine spines)

- in these parts, hind angles somewhat produced, with one spine. ..  
 ..... **Cercothrips Hood**
- 891(890) Abdominal segments not flattened laterally. Ocellar hump distinctly produced. Prothorax without blunt bristles on anterior angles. Bristles on segment IX fine, pointed or nearly so. ....  
 ..... **Gigantothrips Zimm.**
- 892(889) Wings narrow, without double fringe, fringe hairs not very close. Head somewhat produced in front. .... **Mametiella gen. nov.** ✓
- 893(888) Eyes strongly produced behind, on under surface of head. Fore margin of prothorax thickened. .... **Ophthalmothrips Hood**
- 894(887) Cheeks set with more or less stout spines. Prothorax sometimes with sculptures or tubercles. Tube less than four times as long as segment IX. Abdominal segments without stout, lateral bristles. Fore femora of male with or without sickle-bristle at apex.
- 895(896) Genal bristles stout. Abdomen more or less slender. ....  
 ..... **Elaphrothrips Buffa** <sup>(35)</sup>.
- 896(895) Genal bristles fine. Abdomen very broad. .... **cf. Sporothrips Hood**
- 897(878) Head with cephalic cone, much produced in front.
- 898(899) Prothorax of male with anterior horns. Tarsi of female unarmed.  
 ..... **Mecynothrips Bagn.**
- 899(898) Prothorax without horns in both sexes.
- 900(901) Fore femora strongly curved, with a larger and a smaller curved horn-like process without. .... **Klinothrips Bagn.**
- 901(900) Fore femora *at exterior margin* without tooth or horn, but sometimes with stout bristles, emerging from tubercles.
- 902(911) Fore femora of male enlarged or simple, without hump near middle of interior margin.
- 903(904) Eyes much produced backward on lower surface. Antennal 3 not abruptly clubbed. Eyes flattened laterally. ....  
 ..... **Fulgorothesis Faure.**
- 904(903) Eyes not pointedly produced on lower surface.
- 905(906) Head 1.6 to 1.7 times as long as broad, widened posteriorly. Cephalic process short. Tube longer than head. Habitus of *Cercothrips*.  
 ..... **cf. Mametiella n.**
- 906(905) Head four to five times as long as broad. Tube somewhat shorter than head.
- 907(908) Cephalic process as long (or nearly as long) as the rest of the head. Eyes smaller. Antennal 3 somewhat uneven in outline, not abruptly

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<sup>(35)</sup> cf. *Bactrothrips*-group (females), 36(39), p. 66: Antennal joints 3 and 4 filiform, with apical club. Tube long.



- clubbed. Fore tarsi of male with a long, dagger-shaped tooth. ....  
 ..... **Tiarothrips Pries.**
- 908(907) Cephalic projection shorter than the rest of the head, somewhat widened in front.
- 909(910) Antennal joint 3 much shorter than head. Eyes large, convex. Antennal joint 3 smooth but with more distinct club than in the former genus. Fore femora of male enlarged or not, without hump at interior margin, but sometimes with tooth near apex. Fore tarsi of female armed or unarmed. .... **Kleothrips Schmutz** <sup>(36)</sup>.
- a(b) Fore femora of male almost normal, without tooth. ....  
 ..... **Subg. Synkleothrips Pries.**
- b(a) Fore femora of male at least before apex with short, dark tooth, which is somewhat concave near tip.
- c(d) Fore femora of male enlarged or almost normal, without tooth or hump near middle, but with pre-apical tooth; fore tarsi of female armed or simple ..... **Subg. Kleothrips, s.str.**
- d(c) Fore femora of male between base and middle within with a more or less long tooth; apical tooth as in the former subgenus. Fore tibiae pointed within, obliquely truncate. .. **Subg. Akleothrips Pries.**
- 910(909) Antennal joint 3 much longer than head, or at least as long as head (inclusive of process). Habitus of *Idolothrips*. ....  
 ..... **Meiothrips Pries.**
- 911(902) Fore femora of male enlarged, with a hump within. Cephalic process not widened towards apex. Fore tarsi of female unarmed. ....  
 ..... **Phoxothrips Karny**
- 912(877) Segments II to VIII or VII to VIII of abdomen, at least in the male, with a backwardly directed tooth laterally. Tube five to seven times as long as segment IX.
- 913(918) Head about twice as long as wide. Joint 1 of antennae with a stout spine.
- 914(917) Antennal joint 3 without numerous scale-shaped sense-cones on its club.
- 915(916) Anterior part of head somewhat elevated. Under side of abdomen hairy ..... **Dasythrips Hood**
- 916(915) Anterior part of head normal. Abdomen not conspicuously pubescent below ..... **Actinothrips Bagn.**
- 917(914) Joint 3 of antennae at its club with numerous scale-like sense-cones. ....  
 ..... **cf. Zactinothrips Hood**

(<sup>36</sup>) cf. *Elaphrothrips* Buffa : Cephalic process shorter, parallel-sided or nearly so; eyes mostly flattened laterally. — cf. *Pyrgothrips* Karny : Apterous, projection of head about one-third of length of head. Antennal joints stout.

- 918(913) Head not quite three times as long as broad, Joint 1 of antennae unarmed.
- 919(920) Cephalic bristles normal, not unusually long ..... **Idolothrips Hal.**
- 920(919) Median ocellus on either side with a short, stout, laterally directed spine. Two pairs of dorsal cephalic bristles present, which are distinctly longer than width of head ..... **cf. Anactinothrips Bagn.**
- 921 (7) Tube exceptionally long, three to four times as long as head, and about as long as the remaining abdominal segments together (v. p. 65).
- 922(927) Head little produced in front.
- 923(926) Fore wings without double-fringe hairs. Head broadest far behind eyes. Cheeks without projections on either side.
- 924(925) Tube almost bare. Head 1.8 times as long as broad, or more elongate ..... **Hoodiella Karny**
- 925(924) Tube distinctly pilose, though sometimes with hairs adpressed. Head shorter ..... **Leeuwenia Karny**
- a(b) Cheeks straight. A pair of stout postocular bristles present ...  
..... **Subg. Hystriothripoides Fulm.**
- b(a) Cheeks convex. No stout postoculars .....  
..... **Subg. Leeuwenia, s.str.**
- 926(923) Fore wings with numerous double-fringe hairs, Head broadest across eyes. Cheeks with two stout bristle-bearing humps .....  
..... **Hystriothrips Karny**
- 927(922) Head with long process in front eyes, its length three-fourth the length of the rest of the head ..... **Holurothrips Bagn.**

Note: Not included in this key is the genus *Mesopotamothrips* Lieberm. and Gem., as its description is quite insufficient.

## APPENDIX

### DESCRIPTIONS OF NEW GENERA, CONTAINED IN THE KEYS.

#### *Mametiella* gen. nov.

Head much longer than broad, widened posteriorly, distinctly produced in front eyes; anterior ocellus situated in front of eyes, posterior ocelli in a line anterior to middle of eyes. Mouth-cone short, broadly rounded, labrum blunt. Numerous cephalic bristles present, none of them prominent. Antennae 8-segmented, very slender, 8 slenderer than 7 but not constricted at base. Prothorax distinctly shorter than head, pronotum finely reticulate, bristles short, fringed at tips, anterior and posterior angles with one such

bristle each. Pterothorax heavy, dorsal plates reticulate. Wings very narrow, with complete longitudinal vein; stout, fringed basal bristles on roughened basal plate, double fringe wanting. Legs simple, fore tarsi unarmed in both sexes. Abdomen narrow, strongly tapering towards apex, tergites reticulate at least laterally. Tube very long, slender, longer than head. Bristles at sides of abdomen partly fringed, partly blunt, stout, moderately long. Intermediate wing retaining spines stout.

Typus generis : *Mametiella ardisiae* spec. nov.

Near *Cercothrips*, *Gigantothrips*; differing from both as well as from *Smeringothrips* by the narrow wings, the three stout fringed basal bristles and the lack of the double-fringe hairs. The stout fringed major bristles of the body are also characteristic, as well as the short cephalic process. *Leeuwenia*, though similar in habitus, has tube much longer and densely setose, and is of stouter build.

***Mametiella ardisiae* spec. nov.**

Male : Blackish brown, all legs pale yellow, coxae shaded. Joints 1 and 2 of antennae dark, 3 to 6 pale yellow, 7 yellow in basal half or almost wholly so, the remainder and joint 8 slightly shaded. Fore and hind wings shaded at base, with thick, dark longitudinal vein. Bristles on head and prothorax and those on segment IX of abdomen shaded or partly so, all others pale.

Head elongate, much widened posteriorly, with distinct process in front, surface roughened, the numerous but short cephalic bristles emerging from small warts; major postocular bristles wanting; all cephalic bristles are either pointed or blunt. Head somewhat reticulated between eyes. Ocelli situated in an equilateral triangle, front ocellus in front of a line drawn across fore margin of eyes. Eyes elongate-ovate. Sense-cones long, slender, joint 3 with one, 4 with two, 5 and 6 with two + 1 each; joint 8 slender, narrower at base than 7 at apex. Fore legs only little stouter than middle and hind legs, unarmed. Prothorax much narrower than pterothorax, distinctly finely reticulate dorsally, major bristles shaded, stout, blunt or fringed, antero-angulars short, antero-marginals minute, but of varying length, invariably shorter than angulars; epimerals short, stout, blunt, placed on a conspicuous tubercle. Metanotum and abdominal tergites with distinct reticulation. Mesothorax with almost pointed, at least rectangular, angles, metathorax with convex sides. Wings very slender, slightly curved, not narrowed at middle, fore wings with three fringed, stout basal bristles which are placed in a straight line; basal plate of fore wings roughened. Double fringe wanting. Exterior surface of femora also rugose, set with numerous small, pale, short setae. Abdomen strongly narrowed towards apex, central plate

of tergite I pointed, triangular; tergite II three times as broad as long, VIII only 1.35 times as broad as long. Posterior angles of tergite I each with one, tergites II to VIII with two pale, stout, blunt or fringed bristles; wing retaining spines of intermediate segments dark, stout; bristles on segment IX dark, b.1 fringed, b.2 and 3 pointed. Tube long, somewhat incrassate at base, parallel-sided for the major part, with a few fine setae, tip of tube somewhat conically narrowed. Anal setae moderately long.

Measurements of holotype (in  $\mu$ ) : Head length 277 (inclusive of process 310), width across eyes 152, in basal third 192; length of eyes 100. Antennal joints, lengths (widths), 32-36(34), 60(31), 96(21), 86(24), 80(24), 70(25), 48-50(21), 32-36(11). Prothorax length 164-168, width 260 (inclusive of coxae 310). Antero-angular bristles of prothorax, 32-36, epimerals 44-48. Pterothorax length 345-363, width 400. Wings length 950; basal wing bristles 28-32, 40-44 and 48-52, resp. Abdominal segment II, length 107, width 346; segment VIII, length 124, width 188; segment IX, length 88, width 134. Tube length 433, width at base 67, at apex 36. B.1 on segment IX 60-72, b.2, 28, b.3, 108. — Total body length (distended) : 2.4 mm. (Small specimen : 2 mm.).

Habitat : Mauritius, Macabé, 25.X.1939, a few males and females on leaves of *Ardisia* (?) *insularis*, leg. R. Mamet.

#### **Boothrips gen. nov.**

Body broad and flat. Antennae 8-segmented, the three last joints slender, 8 distinctly separated from 7; sense-cones small; areola of joint 2 near apex. Head somewhat broader than long, eyes large, cheek arched, narrowed behind, rough. Mouth-cone *very* short, broadly rounded. Posterior ocelli farther apart from each other than from front ocellus. Bristles hyaline, decidedly infundibuliform, postero-angulars shorter than anteroangulars or coxals. Head scarcely longer than prothorax. Fore femora incrassate, flat, fore tarsi with stout tooth in both sexes, which is obliquely directed forward. Pterothorax transverse. Wings very narrow, constricted at middle, with very slight bend and a slight longitudinal fold along middle, very slightly wider in apical half. Hind femora somewhat thickened, middle femora simple. Abdominal segments strongly transverse. Tube evenly conical, shorter than head.

Typus generis : *Boothrips singularis* spec. nov.

This genus comes near to *Karnyothrips* Wats., but the bristles are decidedly funnel-shaped, postero-angulars shorter than antero-angulars and terminal antennal joints long and slender; head broader than long, cheeks arched, anal setae not exceptionally long.

***Boothrips singularis* spec. nov.**

**Female** : Dark brown, fore tibiae at extreme base and longitudinally clearer, tarsi yellowish grey, middle and hind tibiae dark, the latter paler at base, within, much paler at apex, the whole outer margin strongly shaded. Wings pale at base, shaded at least in the two apical thirds, particularly along middle, extreme tip of fore wings clear. Antennae dark, joint 8 greyish yellow at pedicel and about middle, darker beyond base, at apex and inner margin, 4 and 5 somewhat paler beyond base, joint 2 somewhat lighter apically, terminal joints wholly dark. Bristles hyaline.

Head (inclusive of interantennal process) exactly as long as broad, from eyes somewhat shorter than broad, broader across cheeks than across eyes; eyes large, cheeks arched, roughened, with extremely fine pale setae, constricted behind; ocellar triangle not equilateral, front ocellus somewhat behind level of fore margin of eyes; interantennal projection straight, rather broad. Mouth-cone very short, very broadly rounded. Postocular setae conspicuous, somewhat surpassing margins of vertex, infundibuliform, situated near margin of vertex. Antennae slender, setae and sense-cones short, joint 1 short, narrowed towards apex, 2 normal, 3 slightly asymmetrical, 3 to 6 each with two weak sense-cones, 6 with an accessory vestigial one, 7 with one fine dorsal sense-cone; joints 6, 7 and 8 very slender, 7 nearly parallel-sided, 8 much narrower at base than 7 at apex, broadest about basal fourth, gradually narrowed towards apex. Prothorax little shorter than head, with two pairs of moderately long, funnel-shaped antero-marginal bristles, epimeral bristles shorter than antero-angulars, coxal bristle being longest prothoracic bristle. Fore femora incrassate, interior margin somewhat roughened, fore tibiae stout, simple, fore tarsi with stout, forwardly directed tooth. Pterothorax broader than long, metascutum I very finely reticulate, with two minute setae; metascutum II strongly transverse, fused with I. Wings weak, very slender, narrowed towards middle, slightly widened from middle to apex, with a slight longitudinal carina, which is more conspicuous in hind wings; basal setae short, stout, infundibuliform, hyaline; six double-fringe hairs present. Central plate of tergite I finely reticulate, strongly transverse, hat-shaped. Abdominal segments strongly transverse, II to VII with two pairs of retaining spines, II to VIII with one pair of microsetae (exteriorly of micropores), situated on IX somewhat in front, exteriorly to them; segments II to IX with two pairs of stout, hyaline funnel-bristles, on anterior segments, the interior bristle being longer than the exterior, being of equal length on segment VIII and also on IX. Tube short, evenly narrowed towards tip. Anal bristles longer than tube. Hind femora distinctly thicker than middle femora, but weaker than fore femora.



Measurements of holotype (in  $\mu$ ) : Head length 180 (total 196), width across cheeks 195-198; lateral diameter of eye 68; distance of hind ocelli 36-38; distance of hind ocelli from front ocellus 24; postocular bristles length 40-44, distance from each other 116, from cheeks 16; head length (inclusive of mouth-cone), 268-272. Antennae, lengths (breadths) of joints : 22(b.36, ap. 28), 48(29), 50(26), 45(25), 49(22-23), 56(20-21), 48-49(15), 45-46(10). Fore femora length 240-244, width 136. Pronotum, length 168, breadth 363 without coxae 303; antero-angular bristles 36, antero-marginals ? 28; epimerals 28, coxals 44. Pterothorax, length 277, width 346-363. Wings, length 640, breadth at middle 42, at double fringe 60; basal wing bristles, 28, 28, 28; their distances 12, 24, b.2 somewhat inward. Central plate of tergite I, length 60, width at base 148; segment IX length (middle) 76; length of bristles, b.1, 64-68, b.2, 68-72, b.3 (pointed) 120. Tube, length 124 (dorsal) — 128 (lateral), breadth at base 63, at apex 29.

Male : Coloration as in female, shape of antennae and legs the same. Double fringe 3-4. Body bristles somewhat shorter, b.1 on segment IX infundibuliform, b.2 a short pale bristle, nearly shorter than hair-like b.1a, b.3 long, setiform. Sternite IX somewhat produced, anal setae longer than tube. Aedeagus haplothripoid, but comparatively broad, slightly widened at apex, width 10-11  $\mu$ , at apex 11-12  $\mu$ , tip rounded.

Measurements of male (allotype) in  $\mu$  : Head, length 152 (with projection 168), width 172; diameter of eyes 60. Antennae length 310 lengths (breadths) of joints : 22(31), 39-42(25), 42(22), 41(22), 42(21), 45(16), 41(15), 34-35(10). Prothorax, length 120-124, width 288 (without coxae 225). Pterothorax length 200, width 277. Wings length 520. Bristles 1, 2 of segment IX 45. Tube length 105, width at base 50, at apex 24. Anal hairs 132-145.

Habitat : 1 female (holotype), one male (allotype), Congo Belge, Rutshuru, III.1938, on coffee plant, leg. J. Ghesquière (No. 6223). The habit of this species is presumably predaceous.

#### **Faureothrips gen. nov.**

Head and legs distinctly reticulate. Eyes rather small, globular, head constricted behind them, cheeks strongly arched. Head longer than broad, slightly produced in front. Antennae 8-segmented, long and slender, joints pedicellate from 4 onwards, 8 sharply separated from 7. Sense-cones long, fine, setiform. Ocelli wanting. One pair of long, fine, infundibuliform interocular bristles and two pairs of similar postoculars present. Major bristles of body fine, hyaline, with funnel-tip. Head somewhat longer than wide, somewhat longer than the prothorax. Mouth-cone heavy, broadly rounded.

Pterothorax strongly transverse, narrower than prothorax. Abdomen heavy, tube short, not ribbed, conical, much shorter than head. Bristles on segment IX fine, long, the two dorsal pairs with dilated tips. Anal hairs long.

Typus generis : *Cryptothrips reticulatus* Trybom (Arkiv f. Zool., p. 9, 1912).

This genus is distinguished from *Sagenothrips* by the lack of wings and ocelli, the three pairs of long cephalic bristles and the much smaller eyes, from *Mystrothrips* by the arched cheeks, the cephalic bristles (three pairs instead of one), the lack of the tarsal tooth in the female and the absence of wings and ocelli.

#### ***Mystrothrips* gen. nov.**

Body (inclusive of legs) distinctly coarsely reticulate. Eyes nearly globular, distinctly separated from cheeks by a deep constriction. Head longer than broad, distinctly produced in front of eyes, longer than prothorax. Front ocellus overhanging, surpassing level of fore margin of eyes, not farther apart from hind ocelli than these from each other. Major bristles well developed, stout, spoon-shaped. One pair of stout postoculars present, interocellars wanting. Antennae 8-segmented, joint 8 constricted at base, sharply separated from 7; joint slightly net-like, intermediate joints with short pedicel; base of joint 3 transversely annulated, with ring-like thickening. Sense-cones on 3 and 4 long and slender. Mouth-cone broadly rounded. (Wings reduced to pads). Legs slender, fore femora not enlarged, fore tarsi of female (male unknown) with conspicuous but rather slender, curved tooth. Tube strongly conical, shorter than head. Bristles on segment IX of abdomen long, fine, with knobbed tips.

Typus generis : *Sagenothrips dammermani* Priesner (*Konowia*, XII, p. 75, fig. 14, 1933).

Differing from *Sagenothrips* Pries. (typ. gen. *S. gracilicornis* Pr.) by the less elongate intermediate antennal joints, the shorter sense-cones, the presence of one pair of long postocular bristles, a conspicuous tarsal tooth (in the female) and the strongly spoon-shaped major bristles. From *Fau-reothrips* nov. it is distinguished by the larger eyes, the lack of long interocellar bristles, the possession of a tarsal tooth in the female, the less heavy abdomen and the presence of ocelli. It comes closest to *Malacothrips* Hinds, differing by the basal thickening of antennal 3, the spoon-shaped major bristles, the reticulate intermediate antennal joints, and the knobbed anal hairs.

LIST OF GENERA, SUBGENERA AND SYNONYMS <sup>(37)</sup>

(Mer. = Merothripidae; Aeol. = Aeolothripidae; Het. = Heterothripidae;

Phl. = Phlaeothripidae; Thrip. = Thripidae)

- Abiastothrips* Pries. — Phl. (Thys. Eur., 1927, p. 556), typ. gen. *Trichothrips schaubergeri* Pr. (Sitz. Ak. Wiss. Wien, 1920, p. 86).
- Acallurothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1921, p. 269); typ. gen. *A. macrurus* Bagn. (l.c. p. 270).
- Acanthinothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1908, p. 27), typ. gen. *Idolothrips spectrum* Hal. (Hom. Ins., 1852, p. 1097). Synonym of *Idolothrips* Hal.
- Acanthothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 269), typ. gen. *Phloeothrips nodicornis* Reut. (Thys. Fenn., 1880, p. 16).
- Achaetothrips* Karny — Thr. (Mitt. Nat. Ver. Wien, 1908, p. 111), typ. gen. *A. loboptera* Karny (l.c.). Synonym of *Thrips* L.
- Acremonothrips* Pries. — Thrip. (Rev. zool. bot. Afric., 1939, p. 168), typ. subg. *Taeniothrips aethiops* Hood (Entomologist, 1925, Sep. p. 2). Subgenus of *Taeniothrips* Serv.
- Acrothrips* Karny — Phl. (Soc. Ent. Cech., 1920, p. 43), typ. gen. *A. sorex* Karny (l.c.). Synonym of *Kleothrips* Schmutz.
- Actinothrips* Bagn. — Phl. (Linn. Soc. Journ., 1909, p. 332), typ. gen. *A. longicornis* Bagn. (l.c. p. 333).
- Adelothrips* Hood — Phl. (Revista de Ent., 1938, p. 380), typ. gen. *A. xanthopus* Hood (l.c.).
- Adiaphorothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1909, p. 15), typ. gen. *A. simplex* Bagn. (l.c. p. 16). Synonym of *Machatothrips* Bagn.
- Adiheterothrips* Ram. — Het. (Contr. Knowl. Thys. Ind., 1928, p. 247), typ. gen. *A. jambudvipae* Ram. (l.c. p. 248).
- Adraneothrips* Hood — Phl. (Psyche, 1925, p. 54), typ. gen. *Haplothrips* (?) *tibialis* Hood (Ins. Insc. Menstr., 1914, p. 39).
- Adrothrips* Moul. — Phl. (Bull. S. Calif. Acad. Sci., 1942, p. 4), typ. gen. *A. aureus* Moul. (l.c. p. 5).
- Aeliothrips* Ribaga — Thrip. (Boll. Ent. Agrar., 1902, p. 11), err. typ. for *Heliothrips* Hal.
- Aelothrips* Ribaga — Aeol. (Boll. Ent. Agrar., 1902, p. 10), err. typ. for *Aeolothrips* Hal.
- Aeclothrips* Hal. — Aeol. (Ent. Mag., 1836, p. 451), typ. gen. *Ac. albicinctus* Hal. (l.c.).

<sup>(37)</sup> All *synonyms* are printed in italics.

- Agerothrips Tryb. — Thrip. (Schultze Exped., 1910, p. 159), typ. gen. *A. badius* Tryb. (l.c. p. 160).
- Agnostochthona Kirk. — Phl. (Proc. Hawaii Ent. Soc., 1907, p. 102), typ. gen. *A. alienigera* Kirk. — (? identical with *Hoplothrips*).
- Agnostothrips Moul. — Phl. (Pan-Pacif. Ent., 1947, p. 142), typ. gen. *A. semiflavus* Moul. (l.c.).
- Agrothrips Jacot-Guill. — Phl. (Journ. Ent. Soc. S. Afr., 1939, p. 40), typ. gen. *A. priesneri* Jacot-Guill. (l.c. p. 41).
- Akleothrips Pries. — Phl. (Konowia, 1934, p. 199), typ. subgen. *Kleothrips karimonensis* Pries. (l.c. p. 332). Subgen. of *Kleothrips* Schmutz.
- Aleurodothrips Frkl. — Phl. (Ent. News, 1909, p. 228), typ. gen. *Cryptothrips fasciapennis* Frkl. (Proc. U.S. Nat. Mus., 1908 p. 727).
- Allelothrips Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1932, p. 288), typ. gen. *A. cincticornis* Bagn. (l.c. p. 289).
- Allothrips Hood — Phl. (Bull. Ill. State Lab., 1908, p. 372), typ. gen. *A. megacephalus* Hood (l.c. p. 373).
- Amblythrips Bagn. — Thrip. (Journ. Econ. Biol., 1911, p. 3), typ. gen. *Thrips ericae* Hal. (Ent. Mag., 1836, p. 448).
- Amorphothrips Bagn. — Thrip. (Ent. Mo. Mag., 1924, p. 252), typ. gen. *A. klebsi* Bagn. (l.c.). Fossil.
- Amothrips Pries. — Phl. (Rev. zool. bot. Afric., 1939, p. 64), typ. gen. *A. ghesquierei* Pries. (l.c.).
- Amphibolothrips Buffa — Phl. (Boll. Lab. Zool. Portici, 1909, p. 193), typ. gen. *A. grassii* Buffa (l.c. p. 194).
- Amphorothrips Pries. — Thrip. (Rev. zool. bot. Afric., 1939, p. 49), typ. gen. *A. reticulatus* Pries. (l.c. p. 50).
- Anactinothrips Bagn. — Phl. (Linn. Soc. Journ., 1909, p. 329), typ. gen. *A. meinerti* Bagn. (l.c. p. 330).
- Anaphothrips Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 142), typ. gen. *Thrips obscura* Müll. (Zool. Dan. Prodr., 1776, p. 96).
- Anaphothrips* Shtsherb. — Thrip. (Zool. Anz., 1907, p. 914), err. typ. for *Anaphothrips* Uz.
- Anchylothrips Hood — Phl. (Revista de Ent., 1939, p. 564), typ. subgen. *Haplothrips preeri* Hood (l.c. p. 565). Subgen. of *Haplothrips* Serv.
- Androthrips Karny — Phl. (Zentralbl. Bacteriol. Parasitenk., 1911), typ. gen. *Mesothrips melastomae* Zimm. (Bull. Inst. Bot. Buitenzorg. 1900, p. 17).
- Aneurothrips Karny — Thrip. (Marcellia, 1912, p. 117), typ. gen. *A. punctipennis* Karny (l.c.).
- Ankothrips D.L. Crawf. — Aeol. (Pomona Coll. Journ. Ent., 1909, p. 100), typ. gen. *A. robustus* L.C. Crawf. (l.c.).

- Anomalothrips* Morg. — Thrip. (Proc. Ent. Soc. Wash., 1929, p. 5), typ. gen. *A. amygdali* Morg. (l.c.). Synonym of *Iseurothrips* Bagn.
- Anophothrips* Wats. — Phl. (Florida Buggist, 1918, p. 76), err. typ. for *Gnophothrips* Hood and Will.
- Anthemothrips* Karny — Phl. (Berl. Ent. Zeit., 1907, p. 51), typ. gen. *A. reuteri* Karny (l.c.). Synonym of *Haplothrips* Serv.
- Anthothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 237), typ. gen. *Thrips aculeatus* F. (Syst. Rhynchot., 1803, p. 312). Synonym of *Haplothrips* Serv.
- Anthrothrips* Wats. — Phl. (Flor. Buggist, 1919, p. 117), err. typ. for *Anthothrips* Uz.
- Aorothrips* Pries. — Thrip. (Konowia, 1933, p. 310), typ. gen. *A. tenuis* Pries. (l.c.).
- Apelaunothrips* Karny — Phl. (Notulae Ent., 1925, p. 82), typ. gen. *Ophiothrips medioflavus* Karny (Deli Proefst. Medan, 1925, p. 50).
- Aptenothrips* John — Thrip. (Ent. Mitt., 1925, p. 22) = *Aptinothrips* Hal.
- Apterothrips* Bagn. — Thrip. (Trans. Nat. Hist. Soc. Northumb., 1908, p. 5), typ. gen. *A. subreticulatus* Bagn. (l.c.) = *Anaphothrips secticornis* Tryb. — Subg. of *Anaphothrips* Uz.
- Apterygothrips* Pries. — Phl. (Bull. Soc. R. Ent. d'Egypte, 1933, p. 1), typ. gen. *A. haloxylis* Pries. (l.c.).
- Aptinothrips* Hal. — Thrip. (Ent. Mag., 1836, p. 445), typ. gen. *Thrips rufa* Gmel. (Carol. Linn. Syst. Nat., 1788, p. 2224).
- Archaeolothrips* Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1924, p. 627), typ. gen. *A. fontis* Bagn. (l.c.). Synonym of *Desmothrips* Hood.
- Archaeothrips* Field — Thrip. (Bibliogr. Zool., 1910, p. 74). Synonym of *Thrips* L. (p.p.).
- Archaeothrips* Pries. — Thrip. (Ent. Mitt., 1924, p. 137), typ. gen. *A. latipennis* Pries. (l.c. p. 138), Fossil. Cf. *Gerontothrips* nom. nov.
- Archankothrips* Pries. — Aeol. (Ent. Mitt., 1924, p. 132), typ. gen. *A. pugnifer* Pries. (l.c.). Fossil.
- Arcyothrips* Hood — Phl. (Proc. Ent. Soc. Wash., 1934, p. 114), typ. gen. *A. africanus* Hood (l.c. p. 115).
- Arhipidothrips* Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1932, p. 293), typ. gen. *A. tenuicornis* Bagn. (l.c.).
- Arpediothrips* Hood — Thrip. (Proc. Biol. Soc. Wash., 1927, p. 197), typ. gen. *A. mojave* Hood (l.c.).
- Arrhenochiris* Enderl. — Phl. (Zool. Anz., 1929, p. 39), typ. gen. *A. retamae* End. (l.c.). Synonym of *Haplothrips* Serv.
- Arrhenothrips* Hood — Phl. (Ins. Insc. Menstr., 1919, p. 98), typ. gen. *A. ramakrishnai* Hood (l.c. p. 99).



- Asemothrips Hood — Phl. (Proc. Biol. Soc. Wash., 1919, p. 83), typ. gen.  
*A. picturatus* Hood (l.c.).
- Aspidothrips Karny — Phl. (Soc. Ent. Cech., 1920, p. 38), typ. gen. *A.*  
*platygaster* Karny (l.c. p. 39).
- Asprothrips J.C. Crawf. — Thrip. (Proc. Ent. Soc. Wash., 1938, p. 109),  
typ. gen. *A. raui* J.C. Crawf. (l.c.).
- Astrothrips Karny — Thrip. (Treubia, 1921, p. 239), typ. gen. *Heliothrips*  
*globiceps* Karny (Arch. f. Naturg., 1913, p. 125).
- Athrips Pries. — Thrip. (Rev. zool. bot. Afric., 1938, p. 353), typ. subgen.  
*Thrips kikuyuensis* ssp. *brevisetosa* Tryb. (Ark. f. Zool., 1911, p. 10).  
Subgenus of *Thrips* L.
- Atractothrips Hood — Phl. (Proc. Biol. Soc. Wash., 1938, p. 27), typ. gen.  
*A. bradleyi* Hood (l.c. p. 28).
- Audiothrips Moul. — Aeol. (Ann. Mag. Nat. Hist., 1930, p. 195), typ.  
gen. *A. perplexus* Moul. (l.c.).
- Australothrips Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1916, p. 214), typ.  
gen. *A. bicolor* Bagn. (l.c. p. 215).
- Austrothrips Brèthes — Phl. (Ann. Mus. Nac. Buen. Aires, 1915, p. 89),  
typ. gen. *A. verae* Brèthes (l.c. p. 90).
- Ayyaria Karny — Thrip. (Mem. Dept. Agr. Ind., 1926, p. 193), typ. gen.  
*A. chaetophora* Karny (l.c.).
- Bacillothrips Buffa — Phl. (Redia, 1907, p. 385), typ. gen. *B. linearis*,  
Buffa (l.c. p. 386).
- Bactrianothrips Bagn. — Phl. (Rev. Franç. d'Ent., 1936, p. 226), typ. gen.  
*B. alluaudi* Bagn. (l.c. p. 227).
- Bactridothrips Karny — Phl. (Zeit. wiss. Ins-Biol., 1919, p. 108, 116;  
Pries., Rev. zool. bot. Afric., 1932, p. 210), typ. *B. idolomorphus*  
Karny (l.c. p. 117). Subgen. of *Bactrothrips* Karny.
- Bactrothrips Karny — Phl. (Ent. Rundschau, 1912), typ. gen. *B. longiven-*  
*tris* Karny (l.c.).
- Baenothrips J.C. Crfd. — Phl. (Proc. E. Soc. Wash., 1948), typ. gen. *B.*  
*guatemalensis* (l.c.).
- Bagnallia* Bagn. — Thrip. (Journ. Econ. Biol., 1911, p. 10). Synonym of  
*Thrips* L. and *Baliothrips* Uz.
- Bagnallia* Karny — Thrip. (Mitt. Nat. Ver. Wien, 1910, p. 54), typ. gen.  
*B. capito* Karny (l.c.). Synonym of *Stenothrips* Uz.
- Bagnalliella* Karny — Phl. (Soc. Ent. Cech., 1920, p. 41), typ. gen. *Cepha-*  
*lothrips yuccae* Hinds (Mon., 1902, p. 94).
- Bagnelliella* Wats. — Phl. (Synopsis, 1923, p. 17, 56), err. typ. for *Bagnal-*  
*liella* Ka.

- 1 Bagnalliola Pries. — Phl. (Rev. Franç. Entom., XVI, 1949, p. 95), typ. gen. *Brachythrips terminalis* Bagn. (Ann. Mag. Nat. Hist., 1928, p. 571).
- Balliothrips Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 204), typ. gen. *Thrips dispar* Hal. (Ent. Mag., 1836, p. 449).
- Baphothrips Pries. — Phl. (Konowia, 1933, p. 69), typ. gen. *B. tricolor* Pries. (l.c. p. 70).
- Barythrips Hood and Will. — Phl. (New York Soc. Ent., 1915, p. 134), typ. gen. *B. sculpticauda* Hood and Will. (l.c. p. 135).
- Bdalsidothrips Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1936, p. 85), typ. subg. *Perissothrips levis* Pries. (l.c.). Subgen. of *Perissothrips* Hood.
- Bebelothrips Buffa — Phl. (Boll. Lab. zool. Portici, 1909, p. 195), typ. gen. *B. latus* Buffa (l.c. p. 196).
- Bebolothrips* Tryb. — Phl. (Ark. Zool., 1912, p. 42), err. typ. for *Bebelothrips* Buffa.
- Belothrips Hal. — Thrip. (Ent. Mag., 1836, p. 450), typ. gen. *B. acuminata* Hal. (l.c.).
- Bolacidothrips Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1930, p. 6), typ. gen. *B. graminis* Pries. (l.c.).
- Bolacothrips Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 212), typ. gen. *B. jordani* Uz. (l.c.).
- Bolbothrips J.C. Crawfd. — Thrip. (Proc. Ent. Soc. Wash., 1945, p. 92), typ. gen. *B. aztecus* J.C. Crawfd. (l.c. p. 93).
- Bolothrips Pries. — Phl. (Treubia, 1926, Suppl., p. 90, 248), typ. gen. *Phloeothrips bicolor* Heeg. (Sitzb. Akad. Wiss. Wien, 1852, p. 477).
- Boothrips Pries. — Phl. (p. 114), typ. gen. *B. singularis* Pries. (l.c.).
- Botanothrips Hood — Phl. (Revista de Ent., 1939, p. 605), typ. subgen. *B. pratensis* Hood (l.c. p. 606). Subgenus of *Bolothrips* Pries.
- Brachythrips Reut. — Phl. (Acta Soc. Faun. Flor. Fenn., 1899, p. 28), typ. gen. *B. flavicornis* Reut. (l.c. p. 29).
- Brachythrips* Schmutz — Thrip. (Sitz. Akad. Wiss. Wien, 1913, p. 997), typ. gen. *B. lineata* Schm. (l.c.). ? Synonym of *Sericothrips* Hal.
- Brachyurothrips Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1921, p. 265), typ. gen. *B. anomalus* Bagn. (l.c.).
- Bradythrips Hood and Will. — Phl. (Psyche, 1925, p. 68), typ. gen. *B. hesperus* Hood and Will. (l.c.).
- Bregmatothrips Hood — Thrip. (Proc. Biol. Soc. Wash., 1912, p. 66), typ. gen. *B. venustus* Hood (l.c. p. 67).
- Brithothrips Moul. — Phl. (Bull. S. Calif. Acad. Sci., 1942, p. 8), typ. gen. *B. fuscus* Moul. (l.c.).

- Bryothrips* Pries. — Phl. (Zeit. öst. Ent. Ver., 1925), typ. gen. *B. pillichellus* Pr. (l.c.).
- Bussothrips* Moul. — Thrip. (Philipp. Journ. Agric., 1935, p. 475), typ. gen. *B. claratibia* Moul. (l.c.). Synonym of *Ayyaria* Karny.
- Caenothrips* Hood — Thrip. (Ins. Insc. Menstr., 1916, p. 38), typ. gen. *Thrips ericae* Hal. (Ent. Mag., 1836, p. 448). Synonym of *Amblythrips* Bagn.
- Caliothrips* Dan. — Thrip. (Ent. News, 1904, p. 296), typ. gen. *C. woodworthi* Dan. (l.c. p. 297).
- Calothrips* Oust. — Thrip. (Bull. Soc. philom. Paris, 1873, p. 23), typ. gen. *C. scudleri* Oust. (l.c.). Fossil.
- Campulothrips* Moul. — Phl. (Occ. Papers Bishop Mus., 1944, p. 310), typ. gen. *C. gracilis* Moul. (l.c. p. 311).
- Caprithrips* Faure — Thrip. (Bull. Brooklyn Ent. Soc., 1933, p. 12 [Sep.]), typ. gen. *C. analis* Faure (l.c. p. 13).
- Carcinothrips* Moul. — Phl. (Trans. R. Soc. S. Austral., 1929, p. 264), typ. gen. *C. lei* Moul. (l.c.).
- Carientothrips* Moul. — Phl. (Occ. Papers Bishop Mus., 1944, p. 306), typ. subgen. *Bolothrips fijiensis* Moul. (l.c.). Subgenus of *Bolothrips* Pr.
- Caudaothrips* Wats. — Phl. (Synopsis, 1923, p. 24), err. typ. for *Caudothrips* Karny.
- Caudothrips* Karny — Phl. (Treubia, 1921, p. 260), typ. gen. *Megalothrips bonannii* Buffa (nec Uzel) (Redia, 1907, p. 388) = *Caudothrips buffai* Karny (l.c.).
- Cecidothrips* Kieff. — Phl. (Marcellia, 1908, p. 165-167), typ. gen. *C. bur-sarum* Kieff. (l.c.).
- Celetothrips* Morg. — Phl. (Proc. Ent. Soc. Wash., 1929, p. 1), typ. gen. *C. breviceps* Morg. (l.c.) Synonym of *Pristothrips* Hood.
- Cephalothripoides* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1927, p. 582), typ. gen. *C. harrisoni* Bagn. (l.c.). Synonym of *Poecilothrips* Uz.
- Cephalothrips* Uz. — Pl. (Mon. Ord. Thys., 1895, p. 244), typ. gen. *Phloeothrips monilicornis* Reut. (Thys. fenn., 1880, p. 21).
- Cephenothrips* Pries. — Phl. (Bernsteinforsch., 1929, p. 135), typ. gen. *C. laticeps* Pries. (l.c. p. 136). Fossil.
- Ceratothripoides* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1918, p. 201), typ. gen. *C. brunneus* Bagn. (l.c.). Synonym of *Taeniothrips* Serv. (based on monstra).
- Ceratothrips* Reut. — Thrip. (Act. Soc. Faun. Flor. Fenn., 1899, p. 65), typ. gen. *C. trybomi* Reut. (l.c.). ? Genus *Thripidarum* (based on monstrum).

- Cercothrips Hood — Phl. (Ins. Insc. Menstr., 1919, p. 73), typ. gen. Acanthinothrips nigrodentatus Karny (Bull. Jard. Bot. Buitenzorg, 1913, p. 120).
- Cercyothrips Morg. — Thrip. (Florida Ent., 1925, p. 1), typ. gen. C. striatus Morg. (l.c.).
- Cervothrips Bagn. — Phl. (Rev. Franç. d'Ent., 1936, p. 229), typ. gen. C. berlandi Bagn. (l.c.).
- Ceuthothrips Hood — Phl. (Revista de Ent., 1938, p. 406), typ. gen. C. timuqua Hood (l.c. p. 407).
- Chaetanaphothrips Pries. — Thrip. (Thys. Eur., 1926, p. 204), typ. gen. Euthrips orchidii Moul. (U.S. Dept. Agric., Techn. Ser. 12, 1907, p. 52).
- Chuetothrips Schille — Thrip. (Akad. Wiss. Krakow, 1910), typ. gen. Ch. uzeli Sch. (l.c.). Synonym of Scolothrips Hinds.
- Chelaeothrips Karny — Phl. (Treubia, 1923, p. 374), typ. gen. Ch. annamensis Karny (l.c.).
- Chilothrips Hood — Thrip. (Proc. Biol. Soc. Wash., 1916, p. 119), typ. gen. Ch. pini Hood (l.c.).
- Chiraplothrips Pries. — Phl. (Bull. Soc. R. Ent. d'Egypte, 1930, p. 271), typ. gen. Haplothrips (Chiraplothrips) faureanus Pries. (l.c.).
- Chiridothrips Ram. and Marg. — Phl. (Rec. Ind. Mus., 1939, p. 32), typ. gen. Ch. indicus Ram. and Marg. (l.c.).
- Chirothripoides Bagn. — Phl. (Linn. Soc. Journ., 1915, p. 505), typ. gen. Ch. typicus Bagn. (l.c.).
- Chirothrips Hal. — Thrip. (Ent. Mag., 1836, p. 444), typ. gen. Thrips manicata Hal. (l.c.).
- Choleothrips Moul. — Phl. (Proc. Linn. Soc. New S. Wales, 1927, p. 155), typ. gen. Ch. geijerae Moul. (l.c.).
- Cholerothrips Kelly and Mayne — Phl. (Austral. Thrips, Sidney, 1934, p. 54) err. typ. for Choleothrips Moul.
- Chonothrips John — Phl. (Ent. Mitt., 1934, p. 9), typ. subgen. Ch. crassicornis John (l.c.). Subgenus of Haplothrips Serv.
- Chromatothrips Schmutz — Phl. (Sitz. Akad. Wiss. Wien, 1913, p. 1043), typ. gen. (desig.) Ch. fasciata Schm. (l.c. p. 1044). Synonym of Aleurodothrips Frkl.
- Cleistothrips Bagn. — Phl. (Ann. Mag. Nat. Hist., 1932, p. 511), typ. gen. C. idolothripoides Bagn. (l.c. p. 512).
- Cnemidothrips Pries. — Phl. (Philipp. Journ. Sci., 1940, p. 403), typ. gen. Diaphorothrips clavipes Pries. (l.c.). Subgen. of Diaphorothrips Karny.
- Cnestrothrips Pries. — Phl. (Rev. zool. bot. Afric., 1932, p. 344; Proc. R.

- Ent. Soc. London, 1939, p. 75), typ. gen. *C. dammermani* Pries. (l.c. p. 76).
- Coenothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1924, p. 629), typ. gen. *C. fallax* Bagn. (l.c.).
- Coenurothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1921, p. 271), typ. gen. *C. brevicollis* Bagn. (l.c.). Synonym of *Neosmerinthothrips* Schmutz.
- Coleothrips* Hal. — Aeol. (Ent. Mag., 1836, p. 451), typ. subgen. *Thrips fasciata* L. (Faun. Suec., 1761, p. 266). Subgenus of *Aeolothrips* Hal.
- Collembolothrips* Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1935, p. 308), typ. gen. *C. mediterraneus* Pries. (l.c.).
- Compsothrips* Reut. — Phl. (Finsk Vet. Soc. Förh., 1901, p. 214), typ. gen. *C. albosignatus* Reut. (l.c.).
- Conocephalothrips* Bianchi — Phl. (Proc. Hawaii Ent. Soc., 1946, p. 499), typ. gen. *C. tricolor* Bianchi (l.c. p. 500).
- Cordyllothrips* Hood — Phl. (Revista de Ent., 1937, p. 517), typ. gen. *C. peruvianus* Hood (l.c. p. 518).
- Coremothrips* Hood — Thrip. (Psyche, 1925, p. 52), typ. gen. *C. pallidus* Hood (l.c.).
- Corynothripoides* Bagn. — Aeol. (Ann. Mg. Nat. Hist., 1926, p. 170), typ. gen. *C. marginipennis* Bagn. (l.c. p. 171).
- Corynothrips* Will. — Thrip. (Journ. Econ. Biol., 1913, p. 209), typ. gen. *C. stenopterus* Will. (l.c. p. 210).
- Coryphothrips* Karny — Phl. (Treubia, 1923, p. 340), typ. gen. *C. trochiceps* Karny (l.c. p. 347).
- Craniothrips* Bagn. — Phl. (Linn. Soc. Journ., 1915, p. 504), typ. gen. *C. urichi* Bagn. (l.c.).
- Cranothrips* Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1915, p. 315), typ. gen. *C. poultoni* Bagn. (l.c. p. 316).
- Cratothrips* Pries. — Phl. (Thys. Eur., 1927, p. 494), typ. gen. *C. angulatus* Pries. (l.c. p. 495).
- Cricothrips* Tryb. — Thrip. (Arkiv. f. Zool., 1912, p. 2), typ. gen. *C. karnyi* Tryb. (l.c. p. 3). Subgen. of *Taeniothrips* S.
- Cryptaplothrips* Pries. — Phl. (Thys. Eur., 1927, p. 491; Proc. R. Ent. Soc. London, 1926, p. 211), typ. gen. *Cryptothrips famelicus* Pries. (Zool. Jahrb., 1926, p. 275).
- Cryptothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 228), typ. gen. *C. latus* Uz. (l.c. p. 230).
- Ctenothripella* Pries. — Thrip. (Thys. Eur., 1927, p. 442). Synonym of *Microcephalothrips* Bagn.



- Ctenothrips* Frkl. — Thrip. (Ent. News, 1907), typ. gen. *C. bridwelli* Frkl. (l.c.).
- Dactuliothrips* Moul. — Aeol. (Pan-Pacif. Ent., 1931, p. 173), typ. gen. *D. spinosus* Moul. (l.c. p. 174).
- Dactylothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1923, p. 629), typ. gen. *D. australis* Bagn. (l.c. p. 630).
- Dantabahuthrips* Shumsher — Thrip. (Ind. Journ. Ent., 1942, p. 123-126), typ. subgen. *Anaphothrips sacchari* Shumsh. (l.c.). Subgen. of *Anaphothrips* Uz.
- Dasythrips* Hood — Phl. (Revista de Ent., 1937, p. 522), typ. gen. *D. regalis* Hood (l.c.).
- Dendrothripiella* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1927, p. 567), typ. gen. *D. phyllireae* Bagn. (l.c.).
- Dendrothripoides* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1923, p. 624), typ. gen. *D. ipomeae* Bagn. (l.c. p. 625).
- Dendrothrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 159), typ. gen. *D. tiliae* Uz. (l.c. p. 160).
- Dentothrips* Faure — Thrip. (Bull. Brooklyn Ent. Soc., 1933, p. 10 (Sep.)) typ. gen. *D. graminis* Faure (l.c. p. 11).
- Dermothrips* Bagn. — Phl. (Fauna Hawaiiens., 1910, p. 677), typ. gen. *D. hawaiiensis* Bagn., p. 678).
- Derothrips* Jacot-Guill. — Phl. (Journ. Ent. Soc. S. Afr., 1940, p. 133), typ. gen. *D. amyae* Jacot-Guill. (l.c. p. 135).
- Desmothrips* Hood — Aeol. (Proc. Biol. Soc. Wash., 1915, p. 57), typ. gen. *Orothrips australis* Bagn. (Ann. Mag. Nat. Hist., 1914, p. 287).
- Deuterothrips* Schmutz. — Thrip. (Sitz. Akad. Wiss. Wien, 1913, p. 997), typ. gen. *D. lineata* Schm. (l.c.) — in part of the edition of the paper as *Brachythrips* (s.d.). Synonym of *Sericothrips* Hal.
- Diaphorothrips* Karny — Phl. (Ent. Mitt., 1920, p. 86), typ. gen. *D. unguipes* Karny (l.c.).
- Diarthrothrips* Will. — Thrip. (Bull. Ent. Res., 1915, p. 269), typ. gen. *D. coffeae* Will. (l.c.).
- Dicaiothrips* Buffa — Phl. (Redia, 1909, p. 169), typ. gen. *D. schotti* Buffa (l.c. p. 170). Synonym of *Elaphrothrips* Buffa.
- Diceratothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1908 p. 14), typ. gen. *D. bicornis* Bagn. (l.c.).
- Dichaetella* Pries. — Thrip. (Wiener Ent. Zeitg., 1921, p. 115), typ. gen. *D. karnyi* Pries. (l.c.).
- Dichaetothrips* Hood — Phl. (Proc. Biol. Soc. Wash., 1914, p. 164), typ. gen. *D. brevicollis* Hood (l.c. p. 165).

- Dichromothrips* Pries. — Thrip. (Stylops, 1932, p. 110), typ. gen. *D. orchidis* Pries. (l.c. p. 111).
- Dichropterothrips* Pries. — Aeol. (Bull. Soc. R. Ent. d'Egypte, 1936, p. 51), typ. subgen. *Melanthrips ficalbii* Buffa (Trentuna Specie, 1907, p. 56). Subgen. of *Melanthrips* Hal.
- Dieranothrips* Tryb. — Aeol. (Schultze Südafr. Exped., 1910, p. 148), typ. gen. *D. fissidens* Tryb. (l.c.). Synonym of *Ankothrips* D. L. Crawford.
- Dictothrips* Moul. — Thrip. (U.S. Dept. Agric., Techn. Ser. 21, 1911, pp. 11, 24). Synonym of *Otenothrips* Frankl.
- Dictyothrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 157), typ. gen. *D. betae* Uz. (l.c. p. 158).
- Dimorphothrips* Bagn. — Phl. (Ins. Samoa, Brit. Mus., 1928, p. 58), typ. gen. *D. microchaetus* Bagn. (l.c. p. 60).
- Dinacanthothrips* Pries. — Phl. (Rev. zool. bot. Afric., 1932, p. 201), typ. subg. *Hoplandrothrips vUILLETi* Karny (Acad. Anz., 1920, p. 2). Synonym of *Pselaphothrips* Hood.
- Dinothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. North., 1908, p. 10), typ. gen. *D. sumatrensis* Bagn. (l.c. p. 11).
- Dinurothrips* Hood — Thrip. (Ins. Insc. Menstr., 1913, p. 150), typ. gen. *D. hookeri* Hood (l.c. p. 151).
- Diopsothrips* Hood — Phl. (Journ. New York Ent. Soc., 1933, p. 421), typ. gen. *D. flavus* Hood (l.c. p. 423).
- Diplacothrips* Hood — Phl. (Revista de Ent., 1937, p. 506), typ. gen. *D. borgmeieri* Hood (l.c. p. 507).
- Diploacanthothrips* Moul. — Phl. (Revista de Ent., 1932, p. 495), typ. gen. *D. fuscus* Moul. (l.c., 1933, p. 240). Synonym of *Phrasterothrips* Pries.
- Diplochelaethrips* Moul. — Phl. (Occ. Papers Bishop Mus., 1944, p. 284), typ. gen. *D. micrommatos* Moul. (l.c.).
- Docessissophothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1908, p. 21), typ. gen. *D. ampliceps* Bagn. (l.c. p. 22).
- Docidothrips* Pries. — Thrip. (Konowia, 1933, p. 314), typ. gen. *D. demonstrans* Pries. (l.c.).
- Dolerothrips* Bagn. — Phl. (Fauna Hawaiiens., 1910, p. 682), typ. gen. *D. flavipes* Bagn. (l.c. p. 685). Synonym of *Hoplothrips* Serv.
- Dolicholepta* Pries. — Phl. (Rev. zool. bot. Afric., 1932, p. 198), typ. subgen. *Dolichothrips giraffa* Karny (Zool. Anz., 1920, p. 299). Subgen. of *Dolichothrips* Karny.
- Dolichothrips* Karny — Phl. (Zool. Anz., 1920, p. 299), typ. gen. *D. longicollis* Karny (l.c.).

- Dorcadothrips* Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1932, p. 49), typ. gen. *D. caespitis* Pries. (l.c. p. 50).
- Dorythrips* Hood — Aeol. (Bull. Brooklyn Ent. Soc., 1931, p. 1), typ. gen. *D. chilensis* Hood (l.c.).
- Dracothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1914, p. 290), typ. gen. *D. ceylonicus* Bagn. (l.c.). = *Kleothrips* Schm.
- Drepanothrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 213), typ. gen. *D. reuteri* Uz. (l.c.).
- Dunatothrips* Moul. — Phl. (Bull. Soc. Calif. Acad. Sci., 1942, p. 10), typ. gen. *D. armatus* Moul. (l.c.).
- Ecacanthothrips* Bagn. — Phl. (Ann. Soc. Ent. Belg., 1908, p. 348), typ. gen. *E. sanguineus* Bagn. (l.c.).
- Echinothrips* Moul. — Thrip. (Synopsis, 1911, p. 37), typ. gen. *E. mexicanus* Moul. (l.c.).
- Egchocephalothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1916, p. 408), typ. gen. *Docessissophothrips monstrosus* Bagn. (l.c.).
- Eidothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1918, p. 219), typ. gen. *E. alluaudi* Bagn. (l.c.).
- Elaphorothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1932, p. 516), typ. gen. *Kleothrips athletes* Karny (Treubia, 1923, p. 355). Synonym of *Elaphrothrips* Buffa.
- Elaphridothrips* Pries. — Phl. (Rev. zool. bot. Afric., 1932, p. 320), typ. gen. *E. andrapterus* Pries. (l.c. p. 321).
- Elaphrothrips* Buffa — Phl. (Redia, 1909, p. 162), typ. gen. *Idolothrips flavipes* Hood (Bull. Ill. State Lab., 1908, p. 377).
- Electrothrips* Bagn. — Het. (Thrip. ?) (Ent. Mo. Mag., 1924, p. 51), typ. gen. *E. hystrix* Bagn. (l.c. p. 252). Fossil.
- Empresmothrips* Karny — Phl. (Soc. Ent. Cech., 1920, p. 40), typ. gen. *E. combusticeps* Karny (l.c. p. 41).
- Emprosthiothrips* Moul. — Phl. (Bull. Soc. Calif. Akad. Sci., 1942, p. 12), typ. gen. *E. niger* Moul. (l.c.).
- Endacnothrips* Pries. — Phl. (Stylops, 1933, p. 149), typ. subgen. *E. horridus* Pries. (l.c.). Subgen. of *Diceratothrips* Bagn.
- Enneothripiella* Moul. — Thrip. (Revista de Ent., 1941, p. 318), typ. subgen. *Enneothrips flavens* Moul. (l.c.). Subgen. of *Enneothrips* Hood.
- Enneothrips* Hood — Thrip. (Journ. New York Ent. Soc., 1935, p. 143), typ. gen. *E. gustaviae* Hood (l.c. p. 144).
- Eocephalothrips* Bagn. — Het. ? (Ann. Mag. Nat. Hist., 1924, p. 160), typ. gen. *Thrips capito* Schlecht. (Zeit. Naturwiss. Halle, 1887, p. 579). Fossil.

- Eoceranthrips* Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1927, p. 170), typ. gen. *Melanthrips annulicornis* Bagn. (Ent. Mo. Mag., 1923, p. 36).  
Fossil.
- Eothrips* Hood — Phl. (Entomologist, 1915, p. 106), typ. gen. *Dolerothrips crassicornis* Karny (Bull. Jard. Bot. Buitenzorg, 1913, p. 84).
- Epithrips* Pries. — Thrip. (Zool. Jahrb., 1926, p. 273), typ. subgen. *E. uze-  
lianus* Pries. (l.c.).
- EremiOTHrips* Pries. — Thrip. (Bull. Soc. Fouad I Ent., 1950, typ. gen. *E. imitator* Pries. (l.c.).
- ErotidOTHrips* Pries. — Aeol. (Rev. zool. bot. Afric., 1939, p. 154), typ. gen. *E. mirabilis* Pries. (l.c. p. 157).
- Erythrothrips* Moul. — Aeol. (Synopsis, 1911, p. 34), typ. gen. *E. arizonae* Moul. (l.c.).
- Ethirothrips* Karny — Phl. (Bull. Ent. Res., 1925, p. 133), typ. gen. *Lio-  
thrips thomasseti* Bagn. (Ann. Mag. Nat. Hist., 1921, p. 288).
- EuceratOTHrips* Hood — Aeol. (Revista de Ent., 1936, p. 424), typ. gen. *E. marginipennis* Hood (l.c. p. 425).
- Euchaethrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1916, p. 402), typ. gen. *Thrips kroli* Schille (Akad. Wiss. Krakow, 1910, p. 7).
- EucoenOTHrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1926, p. 533), = *Coeno-  
thrips* Bagn. (change of name unnecessary).
- Eugeneothrips* Hood — Thrip. (Proc. Biol. Soc. Wash., 1938, p. 11), typ. gen. *Taeniothrips priesneri* Hood (l.c.).
- EugynOTHrips* Pries. — Phl. (Treubia, 1926, Suppl., p. 157), typ. gen. *Cryp-  
tothrips conocephali* Karny (Bull. Jard. Bot. Buitenzorg, 1913, p. 98).
- Euhydatothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1926, p. 99), typ. gen. *E. nigripennis* Bagn. (l.c.).
- Eulophothrips* Schmutz — Phl. (Ann. Mus. Wien, 1909, p. 278), typ. gen. *E. robustus* Schm. (l.c. p. 279). ? Synonym of *DiceratOTHrips* Bagn.
- Eumorphothrips* Schmutz — Phl. (Sitz. Akad. Wiss. Wien, 1913, p. 1049), typ. gen. *E. albicornis* Schmutz (l.c. p. 1050).
- Euoplothrips* Hood — Phl. (Mem. Queensld. Mus., 1918, p. 140), typ. gen. *E. bagnalli* Hood (l.c. p. 141).
- Eupathithrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1908, p. 23), typ. gen. *E. dentipes* Bagn. (l.c. p. 24).
- Euphysothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1926, p. 646), typ. gen. *E. menozzii* Bagn. (l.c.).
- Euphysothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1926, p. 646), typ. gen. *E. convergens* Bagn. (l.c. p. 214).
- Euryaplothrips* Ram. and Marg. — Phl. (Journ. Bombay Nat. Hist. Soc., 1931, p. 1037), typ. gen. *E. crassus* Ram. and Marg. (l.c. p. 1038).

- Eurynothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1908, p. 19), typ. gen. *E. magnicollis* Bagn. (l.c.).
- Eurythrips* Hinds — Phl. (Monogr. 1902, p. 202), typ. gen. *E. ampliventralis* Hinds (l.c.).
- Eurytrichothrips* Pries. — Phl. (Sitz. Akad. Wiss. Wien, 1920, p. 84), typ. gen. *Trichothrips affinis* Reut. (Act. Soc. Faun. Flor. Fenn., 1899, p. 24).
- Euthrips* Hinds — Thrip. (Monogr., 1902, p. 133, 147). Synonym of *Frankliniella* Karny.
- Euthrips* Moulton — Thrip. (U.S. Dept. Agr., T.S. 12, 1907, pp. 42, 52). Synonym of *Taeniothrips* Serv., p.p.
- Euthrips* Targ.-Tozz. — Thrip. (Ann. Agric. Firenze-Roma, 1881, p. 132). Synonym of *Thrips* L.
- Euthrips* Karny — Thrip. (Zool. Annal., 1912, p. 332), typ. gen. *Thrips obscura* Müll. (Zool. Dan. Prodr., 1776, p. 96). Synonym of *Anaphothrips* Uz
- Euthrips* Wats. — Phl. (Synopsis, 1923, p. 19), err. typ. for *Eothrips* Hood.
- Exophthalmothrips* Moulton — Thrip. (Revista de Ent., 1933, p. 126), typ. gen. *E. longipennis* Moulton. (l.c.).
- Exothrips* Pries. — Thrip. (Rev. zool. bot. Afric., 1939, p. 162), typ. gen. *E. monstrosus* Pries. (l.c. p. 163).
- Faureothrips* Pries. — Phl. (p. 116), typ. gen. *Cryptothrips reticulatus* Tryb. (Ark. f. Zool., 1912, p. 9).
- Fauriella* Hood — Het. (Ann. Mag. Nat. Hist., 1937, p. 98), typ. gen. *F. natalensis* Hood (l.c.).
- Formicothrips* Pries. — Phl. (Thys. Eur., 1927, p. 479; Mem. Soc. Scient. Alzate, 1926, p. 485). Synonym of *Oedaleothrips* Hood or subgenus?
- Frankliniella* Karny — Thrip. (Mitt. Nat. Ver. Univ. Wien, 1910, p. 46), typ. gen. *Thrips intonsa* Tryb. (Ent. Tidskr., 1895).
- Franklinothrips* Back — Aeol. (Ent. News, 1912, p. 73), typ. gen. *Aeolothrips vespiformis* L.C. Crawf. (Pomona Coll. Journ., 1909, p. 110).
- Froggattothrips* Bagn. — Phl. (Marcellia, 1928, p. 201; Trans. Ent. Soc. London, 1929, p. 175), typ. gen. *F. acaciae* Bagn. (l.c.).
- Fulgorothrips* Faure — Phl. (Bull. Brooklyn Ent. Soc., 1933, p. 28, typ. gen. *F. priesneri* Faure (l.c. p. 29).
- Fulmekiola* Karny — Thrip. (Bull. Deli Proefstat. Medan, 1925, p. 18), typ. gen. *F. interrupta* Karny (l.c. p. 19) = *F. serrata* (Kobus) (Meded. Proefstat. Oost-Java, 1892, No. 43).
- Galactothrips* Moulton — Phl. (Revista de Ent., 1933, p. 404), typ. gen. *G. diversicolor* Moulton. (l.c. p. 405). — Synonym of *Neosmerinthothrips* Schm.



- Gamothrips Bagn. — Thrip. (i. sched.). — Subg. of *Astrothrips* Karny.
- Gastrothrips Hood — Phl. (Proc. Ent. Soc. Wash., 1912, p. 156), typ. gen. *G. ruficauda* (Hood, l.c.).
- ✓ Gerontothrips Pries. — Thrip. (nom. nov.) for *Archaeothrips* Pries. nec Field.
- Gigantothrips Zimm. — Phl. (Bull. Inst. Bot. Buitenzorg, 1900, p. 18), typ. gen. *G. elegans* Zimm. (l.c.).
- Gigaplothrips Pries. — Phl. (Subgen. of *Haplothrips* Serv.) (see page 79).
- Glaucothrips Karny — Thrip. (*Treubia*, 1921, p. 240), typ. subgen. *Pseudothrips glaucus* Bagn. (*Ann. Mag. Nat. Hist.*, 1914, p. 23). Subgen. of *Pseudothrips* Hinds.
- Glenothrips Pries. — Phl. (*Treubia*, 1922), typ. gen. *Cryptothrips biuncinatus* Karny (*Bull. Jard. Bot. Buitenzorg*, 1913, p. 94).
- Gluphothrips Moul. — Phl. (*Occ. Papers Bishop Mus.*, 1944, p. 302), typ. gen. *G. varicolor* Moul. (l.c. p. 303).
- Glyptothrips Hood — Phl. (*Psyche*, 1912, p. 116), typ. gen. *G. flavescens* Hood (l.c.).
- Gnomonothrips Ram. and Marg. — Thrip. (*Rec. Ind. Mus.*, 1939, p. 28), typ. gen. *G. coimbatorensis* Ram. and Marg. (l.c.).
- Gnophothrips Hood and Will. — Phl. (*Journ. New York Ent. Soc.*, 1915, p. 133), typ. gen. *G. megaceps* Hood and Will. (l.c.).
- Goëthothrips Pries. — Phl. (*Zool. Jahrb.*, 1925, p. 316), typ. gen. *G. terrestris* Pries. (l.c.).
- Gomphiothrips* Moul. — Phl. (*Revista de Ent.*, 1933, p. 403), typ. gen. *G. tibouchinae* Moul. (l.c. p. 404). Syn. of *Treherniella* Wats.
- Goniothrips Hood — Phl. (*Proc. Biol. Soc. Wash.*, 1927, p. 202), typ. gen. *G. denticornis* Hood (l.c.).
- Graphidothrips Moul. — Thrip. (*Rev. Chil. Hist. Nat.*, 1930, p. 272), typ. gen. *G. stuardoi* Moul. (l.c. p. 273).
- Grypothrips Karny — Phl. (*Ark. f. Zool.*, 1924, p. 27), typ. gen. *G. mantis* Karny (l.c. p. 28).
- Gymnothrips Karny — Phl. (*Zool. Anz.*, 1911, p. 501), typ. gen. *G. moultoni* Karny (l.c. p. 502).
- Gynaikothrips Zimm. — Phl. (*Bull. Inst. Bot. Buitenzorg*, 1900, p. 13), typ. gen. *G. uzeli* Zimm. (l.c.).
- Gynoplothrips Pries. — Phl. (p. 104), typ. subgen. *Hoplandrothrips arrhenus* Jacot-Guill. (*Journ. Ent. Soc. S. Afr.*, 1939, p. 49). Subgen. of *Hoplandrothrips* Hood.
- Hadothrips Pries. — Phl. (*Zool. Jahrb.*, 1925, p. 317), typ. gen. *Haplothrips robiniae* Pries. (*Ent. Zeitschr. Frankf.*, 1924, No. 21-22).
- Halmathrips Hood — Thrip. (*Revista de Ent.*, 1936, p. 248), typ. gen. *H. citricinctus* Hood (l.c. p. 249).

- Hammatothrips* Pries. — Phl. (Konowia, 1932, p. 51), typ. gen. *H. crassiceps* Pries. (l.c. p. 52).
- Hannibalia* Gir. — Phl. (Private Publ., 1928; Kelly and Mayne, Austral Thrips, 1934, p. 73), typ. gen. *H. prisca* Gir. (l.c.).
- Haplothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1934, p. 495), typ. gen. *H. globiceps* Bagn. (l.c. p. 496). Synonym of *Haplothrips* Serv.
- Haplothrips* Serv. — Phl. (Hist. Nat. Ins. Hém., 1843, p. 640), typ. gen. *Thrips aculeatus* F. (Syst. Rhyng., 1803, p. 312).
- Hartwigia* Faure — Phl. (Ent. Mem. Dept. Agr. Pretoria, 1949, p. 208), typ. gen. *H. tumiceps* Faure (l.c. p. 210).
- Helionothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1932, p. 506), typ. gen. *Heliothrips brunneipennis* Bagn. (l.c., 1915, p. 318).
- Heliothrips* Hal. — Thrip. (Ent. Mag., 1836, p. 443), typ. gen. *Thrips haemorrhoidalis* Bouché (Nat. schäd. Garten-Ins., 1833, p. 206).
- Hemianaphothrips* Pries. — Thrip. (Zeit. öst. Ent. Ver., 1925), typ. subgen. *Hemian. articulosus* Pries. (l.c.). Subgen. of *Anaphothrips* Uz.
- Hemithrips* Bagn. — Het. (Ent. Mo. Mag., 1933, p. 37), typ. gen. *H. femoralis* Bagn. (l.c.). Fossil.
- Heptathrips* Moul. — Phl. (Bull. S. Calif. Acad. Sci., 1942, p. 3), typ. gen. *H. tonnoiri* Moul. (l.c.).
- Hercinothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1932, p. 506), typ. gen. *Heliothrips bicornatus* Bagn. (l.c. 1919, p. 258).
- Hercothrips* Hood — Thrip. (Psyche, 1927, p. 233), typ. gen. *Heliothrips striatus* Hood (Canad. Ent., 1913, p. 309). Synonym of *Caliothrips* Dan. (teste Hood).
- Heterothrips* Buffa — Phl. (Redia, 1906, p. 124), typ. gen. *H. silvestrii* Buffa (l.c.). Synonym of *Eupathithrips* Bagn.
- Heterothrips* Hood — Het. (Bull. Illin. State Lab., 1908, p. 361), typ. gen. *H. arisaemae* Hood (l.c. p. 362).
- Hindsiana* Karny — Phl. (Mitt. Nat. Ver. Univ. Wien, 1910, p. 51), typ. gen. *Hindsiana flavicincta* Karny (l.c. p. 52). Synonym (not subgenus) of *Haplothrips* Serv..
- Holacothrips* Zool. Rec. 1935 = err. typ. for *Bolacothrips* Uz.
- Holarthrothrips* Bagn. — Het. (Ann. Mag. Nat. Hist., 1927, p. 562), typ. gen. *H. tenuicornis* Bagn. (l.c. p. 563).
- Holopothrips* Hood — Phl. (Ins. Insc. Menstr., 1914, p. 49), typ. gen. *H. signatus* Hood (l.c. p. 50).
- Holothrips* Karny — Phl. (Zool. Anz., 1911, p. 502), typ. gen. *H. ingens* Karny (l.c.).
- Holurothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1914, p. 376), typ. gen. *H. ornatus* Bagn. (l.c.).

- Homothrips Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1915, p. 588), typ. gen. *H. distinctus* Bagn. (l.c. p. 589).
- Hoodia* Karny — Phl. (Mitt. Nat. Ver. Univ. Wien, 1910, p. 41), typ. gen. *H. austriaca* Karny (l.c. p. 43). Synonym of *Liothrips* Uz.
- Hoodiana* Faure — Phl. (Bull. Brooklyn Ent. Soc., 1933, p. 31), typ. gen. *H. pallida* Faure (l.c. p. 32).
- Hoodiella* Karny — Phl. (Treubia, 1923, p. 371), typ. gen. *Leeuwenia convergens* Hood (Mem. Queensld. Mus., 1918, p. 149).
- Hoodothrips* Bondar — Thrip. (Arch. Inst. Biol. Sao Paulo, 1931, p. 83), typ. gen. *H. neivai* Bond. (l.c. p. 84).
- Hoplandrothrips* Hood — Phl. (Proc. Ent. Soc. Wash., 1912, p. 145), typ. gen. *Phloeothrips xanthopus* Hood (l.c.).
- Hoplothrips* Karny — Phl. (s. Hood, Entomologist, 1915, p. 106). Synonym of *Acanthothrips* Uz.
- Hoplothrips* Serv. — Phl. (Hist. Nat. Ins. Hém., 1843, p. 640), typ. gen. *H. corticis* Serv. (l.c.).
- Horistothrips* Morg. — Phl. (U.S. Dept. Agric., 1913, p. 35), typ. gen. *H. australiae* Morg. (l.c. p. 36). ? Synonym of *Rhynchothrips* Hood.
- Hyalopterothrips* Pries. — Thrip. (Bull. Soc. Fouad I Ent., 1938, p. 130), typ. subgen. *Anaphothrips crocatus* Pries. (l.c.). Subgen. of *Anaphothrips* Uz.
- Hydatothrips* Karny — Thrip. (Wiss. Ergebn. Zentralafrika Exped., 19.. p. 281), typ. gen. *H. adolfi-friderici* Karny (l.c.). Synonym (?) of *Sericothrips* Hal.
- Hydiotrips* Hood — Phl. (Revista de Ent., 1938, p. 413), typ. gen. *H. atomarius* Hood (l.c. p. 416).
- Hylotrips* Pries. — Phl. (Rev. zool. bot. Afric., 1932, p. 336), typ. gen. *H. aethiopicus* Pries. (l.c. p. 337).
- Hypothrips* Pries. — Phl. (Wiener Ent. Ztg., 1933, p. 57), typ. gen. *H. desocellatus* Pr. (l.c.).
- Hystriothripoides* Fulmek — Phl. (Treubia, 1924, p. 9), typ. subgen. *H. karnyi* Fulm. (l.c.). Subgen. of *Leeuwenia* Karny.
- Hystriothrips* Karny — Phl. (Ent. Rundschau, 1912, p. 133), typ. gen. *H. phasgonura* Karny (l.c.).
- Idiotrips* Faure — Phl. (Bull. Brooklyn Ent. Soc., 1933, p. 25), typ. gen. *I. bellus* Faure (l.c.).
- Idolimothers* Pries. — Thrip. (Sitz. Akad. Wiss. Wien, 1920, p. 79), typ. gen. *I. paradoxus* Pries. (l.c.).
- Idolothrips* Hal. — Phl. (Brit. Mus., 1852), typ. gen. *I. marginatus* Hal. (l.c.).

- Idsochaetothrips* Moul. — Thrip. (Revista de Ent., 1933, p. 127), err. typ. for *Isochaetothrips* Moul.
- Iniothrips* John — Phl. (Jahrb. zool. Mus. Russ. Akad. Wiss., 1922, p. 348), typ. gen. *I. procericornis* John (l.c. p. 349).
- Iridothrips* Pries. — Thrip. (Philipp. Journ. Sci., 1940, p. 407), typ. gen. *Bregmatothrips* *iridis* Wats. (Ent. Mo. Mag., 1924, p. 253).
- Ischnothrips* Moul. — Phl. (Occ. papers Bishop Mus., 1944, p. 305), typ. gen. *I. zimmermanni* Moul. (l.c.).
- Ischyrothrips* Schmutz — Phl. (Sitz. Akad. Wiss. Wien, 1913, p. 1074), typ. gen. *I. crassus* Schm. (l.c. p. 1076).
- Isochaetothrips* Moul. — Thrip. (Ann. Mag. Nat. Hist., 1928, p. 227), typ. gen. *Physothrips* *seticollis* Bagn. (l.c., 1915, p. 591).
- Isoneurothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1915, p. 592), typ. gen. *I. australis* Bagn. (l.c.).
- Isopterothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1926, p. 553), typ. gen. *I. tenuipennis* Bagn. (l.c. p. 554).
- Isothrips* Pries. — Thrip. (Bull. Soc. Fouad I d'Egypte, 1940, p. 54), typ. subgen. *Isoneurothrips* *orientalis* Bagn. (Ann. Mag. Nat. Hist., 1915, p. 593). Subgen. of *Thrips* L.
- Jacotia* Faure — Phl. (Journ. Ent. Soc. S. Afr., 1940, p. 159), typ. gen. *J. elegiae* Faure (l.c. p. 160).
- Kakothrips* Will. — Thrip. (Entomologist, 1914, p. 247), typ. gen. *Physopus* *robusta* Uz. (Mon. Ord. Thys., 1895, p. 104).
- Kaleidothrips* Kelly — Phl. (Austral. Thrips, Sidney, 1934, p. 73), typ. gen. *K. inquilinus* Kelly (l.c.).
- Karnyia* Wats. — Phl. (Florida Ent., 1922, p. 6) = *Karnyothrips* Wats.
- Karnyothrips* Wats. — Phl. (Synopsis, 1923, p. 23), typ. gen. *Karnyia* *weigeli* Wats. (Florida Ent., 1922, p. 7) = *Haplothrips* *flavipes* Jones (U.S. Dept. Agr., Techn. Ser. 23, 1912, p. 18). Synonym of *Watsoniella* Karny.
- Kellyia* Bagn. — Phl. (Marcellia, 1928, p. 88), typ. gen. *Teuchothrips* *hoo-dianus* Bagn. (Ann. Mag. Nat. Hist., 1924, p. 630).
- Kentronothrips* Moul. — Phl. (Proc. Hawaii Ent. Soc., 1928, p. 126), typ. gen. *K. hawaiiensis* Moul. (l.c.) = *Phloeothrips* *lucasseni* Krüg. — Subgen. of *Podothrips* Hood.
- Kladothrips* Frogg. — Phl. (Agr. Gaz. N. South Wales, 1906), typ. gen. *K. rugosus* Frogg. (l.c.).
- Kleothrips* Schmutz — Phl. (Sitz. Akad. Wiss. Wien, 1913, p. 1057), typ. gen. *K. gigans* Schmutz (l.c. p. 1058).
- Klinothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1918, p. 217), typ. gen. *K. femoralis* Bagn. (l.c. p. 218).

- Koptothrips Bagn. — Phl. (Marcellia, 1928, p. 197), typ. gen. *K. flavicornis* Bagn. (l.c.).
- Krinothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1918, p. 220), typ. gen. *K. divergens* Bagn. (l.c.). Synonym of *Bactrothrips* Karny.
- Kurtomathrips Moul. — Thrip. (Bull. Brooklyn Ent. Soc., 1927, p. 187), typ. gen. *K. morrilli* Moul. (l.c. p. 188).
- Lamillothrips Bagn. — Phl. (Ann. Mag. Nat. Hist., 1923, p. 630), typ. gen. *L. typicus* Bagn. (l.c. p. 631).
- Lamprothrips Moul. — Aeol. (Journ. R. Soc. West Austral., 1934-35, p. 97), typ. gen. *L. maculosus* Moul. (l.c.).
- Lathrobiathrips Hood — Phl. (Journ. New York Ent. Soc., 1933, p. 421), typ. gen. *L. ramuli* Hood (l.c.).
- Leeuwenia Karny — Phl. (Marcellia, 1912, p. 161), typ. gen. *L. gladiatrix* Karny (l.c. p. 162).
- Lefroythrips Pries. — Thrip. (Treubia, 1938, p. 499), typ. subgen. *Taeniothrips lefroyi* Bagn. (Ann. Mag. Nat. Hist., 1913, p. 292). Subgen. of *Taeniothrips* Serv.
- Leptogastrothrips Tryb. — Phl. (Ark. f. Zool., 1912, p. 28), typ. gen. *L. reuteri* Tryb. (l.c. p. 29).
- Leptolothrips Moul. — Phl. (Bull. Brooklyn Ent. Soc., 1927, p. 198), typ. gen. *L. manilae* Moul. (l.c. p. 199).
- Leptothrips Hood — Phl. (Ent. News, 1909, p. 249), typ. gen. *Cryptothrips aspersus* Hinds (Proc. U.S. Nat. Mus., 1902, p. 205) = *Phloeothrips mali* Fitch.
- Leucothrips Reut. — Thrip. (Meddel. Soc. Faun. Flor. Fenn., 1904, p. 107), typ. gen. *L. nigripennis* Reut. (l.c. p. 108).
- Leurothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1908, p. 16), typ. gen. *L. albomaculatus* Bagn. (l.c. p. 17). Synonym of *Compsothrips* Reut.
- ⚧ *Liassothrips* nom. nov. for *Mesothrips* Martynov nec Zimm.
- Limocercyothrips* Wats. — Thrip. (Florida Ent., 1926, p. 9), typ. gen. *L. bicolor* Wats. (l.c. p. 10). Synonym of *Bregmatothrips* Hood.
- Limothrips* Hal. — Thrip. (Ent. Mag., 1936, p. 445), typ. gen. *L. cerealium* Hal. (l.c.).
- Limphysothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1919, p. 272), typ. gen. *L. paradoxus* Bagn. (l.c.).
- Liophloeothrips* Pries. — Phl. (Sitz. Akad. Wiss. Wien, 1919, p. 24), typ. gen. *L. glaber* Pries. (l.c.) Synonym of *Rhynchothrips* Hood.
- Liothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 261), typ. gen. *Phloeothrips setinodis* Reut. (Scott. Naturalist, 1880, p. 310).



- Liotrichothrips* Bagn. — Phl. (Ent. Mo. Mag., 1929, p. 97), typ. gen. *L. hystrix* Bagn. (l.c.). Fossil.
- Lipsanothrips* Pries — Thrip. (Bernsteinforsch., Königsberg, 1929, p. 119), typ. gen. *L. skwarrae* Pries. — Fossil.
- Lisothrips* Reut. — Phl. (Acta Soc. Faun. Flor. Fenn., 1899, p. 36), typ. gen. *L. wasastjernai* Reut. (l.c.).
- Lissothrips* Hood — Phl. (Bull. Illin. State Lab., 1908, p. 365), typ. gen. *L. muscorum* Hood (l.c.).
- Lithadothrips* Scudder — (Bull. U.S. Geol. Survey, 1857, p. 221), typ. gen. *L. vetusta* Scudd. (l.c.).
- Litotetothrips* Pries. — Phl. (Treubia, 1929, p. 449), typ. gen. *L. cinnamoni* Pries. (l.c. p. 450).
- Logadothrips* Pries. — Phl. (Treubia, 1929, p. 190), typ. gen. *L. karnyellus* Pries. (l.c.).
- Lophothrips* Karny — Phl. (Zool. Anz., 1911, p. 503), typ. gen. *L. antennatus* Karny (l.c.).
- Machatothrips* Bagn. — Phl. (Trans. Nat. Hist. Soc. Northumb., 1908, p. 9), typ. gen. *M. biuncinatus* Bagn. (l.c.).
- Macrophthalmothrips* Karny — Phl. (Ark. f. Zool., 1924, p. 18), typ. gen. *Ophthalmothrips argus* Karny (Act. Soc. Ent. Cech., 1920, p. 38).
- Macrothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1908, p. 359), typ. gen. *M. papuensis* Bagn. (l.c.).
- Macurothrips* Vuill. — Thrip. (Bull. Ent. Soc. France, 1914, p. 189), typ. gen. *M. normandi* Vuill. (l.c.).
- Malacothrips* Hinds — Phl. (Monogr., 1902, p. 100), typ. gen. *M. zonatus* Hinds (l.c.).
- Mallothrips* Ram. — Phl. (Contr. Knowl. Thys. India, 1928, p. 308), typ. gen. *M. indicus* Ram. (l.c.).
- Mametiella* Pries. — Phl. (this paper, p. 112), typ. gen. *M. ardisiae* Pr.
- Margaritothrips* Pries. — Phl. (Konowia, 1932, p. 49), typ. gen. *M. sumatrensis* Pries. (l.c. p. 50).
- Mastigothrips* Pries. — Phl. (Konowia, 1932, p. 53), typ. gen. *M. karnyianus* Pries. (l.c. p. 54).
- Mathetethrips* Moul. — Phl. (Occas. Papers Bishop Mus., 1939, p. 143), typ. gen. *M. megacephalus* Moul. (l.c.).
- Mecothrips* Karny — Thrip. (Treubia, 1921, p. 285), typ. gen. *M. anomoceras* Karny (l.c. p. 289).
- Mecynothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1908, p. 356), typ. gen. *M. wallacei* Bagn. (l.c. p. 357).
- Megalomerothrips* Wats. — Phl. (Florida Buggist, 1918, p. 99, 100), typ.

- gen. *M. eupatorii* Wats. (l.c.) = *Diceratothrips harti* Hood (Proc. Biol. Soc. Wash., 1912, p. 12). Synonym of *Diceratothrips auctt.*
- Megalothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 224), typ. gen. *M. bonannii* Uz. (l.c. p. 227).
- Megalurothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1915, p. 589), typ. gen. *M. typicus* Bagn. (l.c.). Synonym of *Taeniothrips* Serv.
- Megaphysothrips* Ram. and Marg. — Thrip. (Rec. Ind. Mus., 1939, p. 25), typ. gen. *M. subramanii* Ram. and Marg. (l.c.).
- Megathrips* Targ.-Tozz. — Phl. (Ann. Agric., 1881, p. 120), typ. gen. *Phloeothrips lativentris* Heeg. (Sitz. Akad. Wiss. Wien, 1852, p. 479).
- Megeugynothrips* Pries. — Phl. (Bull. Soc. R. Ent. d'Egypte, 1929, p. 211), typ. gen. *M. efflatouni* Pries. (l.c. p. 212)
- Megothrips* Wats. — Phl. (Synopsis, 1923, p. 24), err. typ. for *Megathrips* T.-T.
- Meiothrips* Pries. — Phl. (Treubia, 1929, p. 197), typ. gen. *Idolethrips annulatus* Pries. (l.c.).
- Melampodothrips* Pries. — Phl. (Bull. R. Soc. Ent. d'Egypte, 1937, p. 72. 81), typ. subgen. *Podothrips graminum* Pries. (l.c. p. 75).
- Melanothrips* Uz. — Aeol. (Mon. Ord. Thys., 1895, p. 63), err. for *Melanthrips* Hal.
- Melanthrips* Hal. — Aeol. (Ent. Mag., 1836, p. 450), typ. gen. *Thrips fuscus* Sulz. (Abgek. Gesch. Ins., 1776, p. 112).
- Merothrips* Hood — Mer. (Proc. Ent. Soc. Wash., 1912, p. 132), typ. gen. *M. morgani* Hood (l.c.).
- Mesandrothrips* Pries. — Phl. (Konowia, 1933, p. 80), typ. gen. *Haplothrips inquilinus* Pries. (Treubia, 1921, p. 4, 6).
- Mesopotamothrips* Lieberm. and Gemign. — Phl. (Rev. Soc. Ent. Argentin., 1931, p. 212), typ. gen. *M. concordiensis* Lieberm. and Gemign. (l.c.).
- Mesothrips* Martynov — Fam. ? (Bull. Acad. Sci. U.R.S.S., 1927, p. 768), typ. gen. *M. crassipes* Mart. (l.c.) = *Liassothrips* nom. nov.
- Mesothrips* Zimm. — Phl. (Bull. Inst. Bot. Buitenzorg, 1900, p. 12), typ. gen. *M. jordani* Zimm. (l.c.).
- Metaxyothrips* Pries. — Thrip. (Konowia, 1933, p. 316), typ. gen. *M. exspectatus* Pries. (l.c. p. 317).
- Metriothrips* Hood — Phl. (Revista de Ent., 1936, p. 275), typ. gen. *M. midas* Hood (l.c. p. 276).
- Microcanthothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1914, p. 295), typ. gen. *Cephalothrips spinosus* Bagn. (Ann. Soc. Ent. Belg., 1909, p. 147) = *Aleurodothrips fasciapennis* Frkl. — Synonym of *Aleurodothrips* Frkl.

- Microcephalothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1926, p. 413), typ. gen. *Thrips abdominalis* L.C. Crawl. (Pomona Coll. Journ., 1910, p. 157).
- Microthrips* Morg. — Thrip. (U.S. Dept. Agric., 1913, p. 9), typ. gen. *M. piercei* Morg. (l.c.). Synonym of *Leucothrips* Reut.
- Mimothrips* Pries. — Phl. (p. 70, 72), typ. subgen. *Eurhynchothrips hargreavesi* Pr. (Stylops, 1935, p. 30). Subg. of *Eurhynchothrips* Bgn.
- Mitothrips* Tryb. — Aeol. (Ent. Tidskr., 1912, p. 146), typ. gen. *M. megalops* Tryb. (l.c. p. 147). Synonym of *Franklinothrips* Back.
- Monilothrips* Moul. — Thrip. (Rec. Ind. Mus., 1929, p. 93), typ. gen. *M. kempi* Moul. (l.c. p. 94).
- Monochaetella* Pries. — Thrip. (Wiener Ent. Zeitg., 1921, p. 116), typ. subgen. *Dendrothrips saltatrix* Uz. (Mon. Ord. Thys., 1895, p. 164). Subgen. of *Dendrothrips* Uz.
- Monothrips* Moul. — Thrip. (Occas. papers Bishop Mus., 1940, p. 245), typ. gen. *M. flavus* Moul. (l.c. p. 246).
- Moultonia* Bagn. — Phl. (Marcellia, 1928, p. 199), typ. gen. *Dolerothrips* (?) *geijerae* Moul. (Proc. Linn. Soc. N.S. Wales, 1927, p. 157).
- Mycertothrips* Moul. — Thrip. (Revista de Ent., 1932, p. 456), err. typ. for *Mycterothrips* Tryb.
- Mycterothrips* Tryb. — Thrip. (Schultze Südafr. Exped., 1910, p. 158), typ. gen. *laticauda* Tryb. (l.c.).
- Mymarothrips* Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1928, p. 306), typ. gen. *M. ritchianus* Bagn. (l.c.).
- Myopothrips* Pries. — Phl. (Philippin. Journ. Sci., 1940, p. 37), typ. gen. *M. symplocobius* Pries. (l.c. p. 38).
- Myrmecothrips* Pries. — Phl. (Mem. Soc. Scient. Alzate, 1926, p. 485), typ. gen. *M. dampfi* Pries. (l.c. p. 488). Synonym of *Oedaleothrips* Hood.
- Myrmecothrips* Wats. — Phl. (Florida Ent., 1920, p. 20), typ. gen. *M. quercii* Wats. (l.c.). Synonym of *Oedaleothrips* Hood.
- Mystrothrips* Pries. — Phl. (p. 117), typ. gen. *Sagenothrips dammermani* Pries. (Konowia, 1933, p. 75).
- Nanothrips* Faure — Phl. (Publ. Univ. Pretoria, Nat. Sci., 1938, p. 3), typ. gen. *N. breviceps* Faure (l.c. p. 4).
- Necrothrips* Pries. — Phl. (Ent. Mitteil., 1924, p. 147), typ. gen. *N. nanus* Pries. (l.c.). Fossil.
- Neocecothrips* Bagn. — Phl. (Marcellia, 1928, p. 186), typ. gen. *Eothrips bursariae* Moul. (Proc. Linn. Soc. New S. Wales, 1927, p. 159).
- Neocorynothrips* Ram. and Marg. — Thrip. (Rec. Ind. Mus., 1939, p. 21), typ. gen. *N. asiaticus* Ram. and Marg. (l.c. p. 22).

- Neocurhynchothrips* Wats. — Phl. (Synopsis, 1923, p. 77), typ. gen. *N. cubensis* Wats. (l.c. p. 78). Synonym of *Hoplothrips* Serv.
- Neoheegeria* Schmutz — Phl. (Ann. Mus. Wien, 1909, p. 344), typ. gen. *N. dalmatica* Schmutz (l.c.).
- Neohydathrips* John — Thrip. (Bull. Ann. Soc. Ent. Belg., 1929, p. 33), typ. gen. *N. latereostriatus* John (l.c. p. 34).
- Neolimothrips* Shumsher — Thrip. (Ind. Journ. Ent., 1942, p. 8), typ. gen. *N. brachycephalus* Shumsh. (l.c.).
- Neophysopus* Schmutz — Thrip. (Sitz. Akad. Wiss. Wien, 1913, p. 1016), typ. subgen. *N. medioflavus* Schmutz (l.c. p. 1017). Subgen. of *Anaphothrips* Uz.
- Neosmerinthothrips* Schmutz — Phl. (Sitz. Akad. Wiss. Wien, 1913, p. 1051), typ. gen. *N. fructuum* Schmutz (l.c. p. 1052).
- Neothrips* Hood — Phl. (Bull. Ill. State Lab., 1908 p. 371), typ. gen. *N. corticis* Hood (l.c. p. 372).
- Nephothrips* Pries. — Phl. (p. 72), typ. subg. *Eurhynchothrips bipunctatus* Pr. (Rev. Zool. Bot. Afric., 1939, p. 55). Subg. of *Eurhynchothrips* Bagn.
- Nesothrips* Kirk. — Phl. (Proc. Hawaii Ent. Soc., 1907, p. 102), typ. gen. *N. oahuensis* Kirk. (l.c.).
- Neurothrips* Hood — Phl. (Ent. News, 1924, p. 315), typ. gen. *Acanthothrips magnafemoralis* Hinds (Monogr., 1902, p. 199).
- Notothrips* Hood — Phl. (Proc. Ent. Soc. Wash., 1933, p. 200), typ. gen. *Phloeothrips vittatus* Hood (Proc. Biol. Soc. Wash., 1912, p. 11).
- Octothrips* Moul. — Thrip. (Occ. Papers Bishop Mus., 1940, p. 243), typ. gen. *O. suspensus* Moul. (l.c. p. 244).
- Octurothrips* Pries. — Phl. (Konowia, 1931, p. 93), typ. gen. *O. pulcher* Pries. (l.c.).
- Odontothripiella* Newm. — Thrip. (Journ. West. Austral., 1935, p. 95), err. typ. for *Odontothripiella* Bagn.
- Odontanaphothrips* Moul. — Thrip. (Pan-Pacif. Ent., 1926, p. 24), typ. gen. *Anaphothrips tricolor* Moul. (Synopsis, 1911, p. 41).
- Odontimothrips* Pries. — Phl. (Ent. Zeitschr. Frankfurt, 1914, No. 45), typ. subgen. *Phloeothrips denticauda* Pries. (l.c.). Subgen. of *Phlaeothrips* Hal.
- Odontoplothrips* Pries. — Phl. (Zool. Jahrb., 1928, p. 47), typ. subgen. *Trichothrips calcaratus* Hood (Psyche, 1925, p. 57). Subgenus of *Hoplothrips* Serv.
- Odontothripiella* Bagn. — Thrip. (Ent. Mo. Mag., 1929, p. 47), typ. gen. *O. fasciatipennis* Bagn. (l.c. p. 48).

- Odontothripoides* Bagn. — Thrip. (Ent. Mo. Mag., 1929, p. 48), typ. gen.  
*O. morisoni* Bagn. (l.c. p. 49).
- Odontothrips* Serv. — Thrip. (Ins. Hémipt., 1843, p. 643), typ. gen. *Thrips ulicis* Hal. (Ent. Mag., 1836, p. 446).
- Oedaleothrips* Hood — Phl. (Bull. Brooklyn Ent. Soc., 1916, p. 64), typ. gen. *Oe. hookeri* Hood (l.c.).
- Ocdemothrips* Bagn. — Phl. (Fauna Hawaiiensis, 1910, p. 680), typ. gen.  
*Oe. laticeps* Bagn. (l.c.). Synonym of *Nesothrips* Kirk.
- Oidanothrips* Moul. — Phl. (Occas. Papers Bishop Mus. Hawaii, 1944, p. 308), typ. gen. *O. magnus* Moul. (l.c. p. 309).
- Oligothrips* Moul. — Het. (Pan-Pacif. Ent., 1933, p. 139), typ. gen. *O. oreios* Moul. (l.c.).
- Ommatothrips* Hood — Phl. (Insc. Menstr., 1915, p. 33), typ. gen. *O. gossypii* Hood (l.c.). Synonym of *Trybomia* Karny.
- Oncothrips* Karny — Phl. (Zentralbl. Bakteriologie, Parasitenkunde, 1911), typ. gen. *O. tepperi* Karny (l.c.).
- Onychothrips* Karny — Phl. (Zentralbl. Bakteriologie, Parasitenkunde, 1911) typ. gen. *Phloeothrips tepperi* Uz. (Act. Soc. Ent. Boh., 1905, No. 4)
- Opadothrips* Pries. — Het. (Ent. Mitteil., 1924, p. 133), typ. gen. *O. fritschianus* Pries. (l.c.). Fossil.
- Ophidothrips* Karny — see *Apelaunothrips* Karny.
- Ophidothrips* Schmutz — Phl. (Ann. Mus. Wien, 1909, p. 273), typ. gen.  
*O. handlirschi* Schmutz (l.c.).
- Ophthalmothrips* Hood — Phl. (Ins. Insc. Menstr., 1919, p. 67), typ. gen.  
*O. pomeroyi* Hood (l.c.).
- Ophthalmothrips* Karny — Phl. (Soc. Ent. Cech., 1920, p. 38) = *Macrophthalmothrips* Karny.
- Opisthothrips* Hood — Het. (Ann. Mag. Nat. Hist., 1937, p. 101), typ. gen. *O. elytropappi* Hood (l.c. p. 102).
- Organothrips* Hood — Phl. (Proc. Hawaii Ent. Soc., 1940, p. 423), typ. gen. *O. bianchii* Hood (l.c.).
- Ormothrips* Buffa — Phl. (Redia, 1909, p. 166), typ. gen. *O. inermis* Buffa (l.c. p. 168).
- Orothrips* Moul. — Aeol. (U.S. Dept. Agr., Techn. Ser. 12, 1907, p. 45) typ. gen. *O. kelloggi* Moul. (l.c.).
- Orthomelanthrips* Melis — Aeol. (Redia, 1934, p. 34). Synonym of *Melanthrips* Hal.
- Orthothrips* Pries. — Phl. (Deutsche Ent. Zeitg., 1925, p. 23), typ. gen.  
*O. caudatus* Pries. (l.c.).
- Oscythrips* Schille — Thrip. (Akad. Wiss. Krakau, 1904, p. 38), err. typ. for *Oxythrips* Uz.



- Colletesaphidothrips* J.C. Crawford — Thrip. Proc. Ent. Soc. Wash., 1943, p. 151), typ. gen. *O. spilleri* J.C. Crfd. (l.c. p. 152).
- Oxyrhinothrips* Pries. — Thrip. Konowia, 1933, p. 312), typ. subgen. *O. scolopax* Pries. (l.c.). Subgenus of *Thrips* L.
- Oxythrips* Uz. — Thrip. Mon. Oud. Thys., 1895, p. 133, typ. gen. *O. ajugae* Uz. (l.c.).
- Pachythrips* Uz. — Thrip. Mon. Oud. Thys., 1895, p. 141), typ. gen. *Thrips schaptera* Hal. Ent. Mag., 1836, p. 450). Synonym of *Timeothrips* Serv.
- Pachythrips* Hood — Phil. Psyche, 1912, p. 116) = *Glyptothrips* Hood.
- Pachythrips* Tryb. — Thrip. Östf. Ver. Akad. Förel., 1896, p. 622, err. typ. f. *Pachythrips* Uz.
- Palaethrips* Scudder — Acad. Bull. U.S. Geol. Surv., 1875, p. 222), typ. gen. *P. fossilis* Scudd. (l.c.). Fossil.
- Paracanthothrips* Bagn. — Phil. Rev. France d'Ent., 1936, p. 219), typ. gen. *P. typicus* Bagn. (l.c. p. 221).
- Paracanthothrips* Bagn. — Thrip. Rev. Ind. Mus., 1912, p. 257, typ. gen. *P. indicus* Bagn.
- Paracanthothrips* Bagn. — Phil. Trans. Nat. Hist. Soc. Northumberland., 1908, p. 208), typ. gen. *P. gracilis* Bagn. (l.c.). Synonym of *Gigantothrips* Zimm.
- Paranthothrips* Pries. — Thrip. Stylops, 1935, p. 125), typ. gen. *P. takahashii* Pries. (l.c.).
- Paracryptothrips* Moul. — Phil. Occ. Papers Bishop Mus., 1944, p. 281), typ. gen. *P. inermis* Moul. (l.c.).
- Paraneokliniella* Pries. — Thrip. Sitz. Akad. Wiss. Wien, 1920, p. 73), typ. gen. *P. verbasci* Pries. (l.c.).
- Paranthrips* Hood — Phil. Revista de Ent., 1939, p. 602), typ. gen. *P. thomasi* Hood (l.c. p. 603).
- Paramesothrips* Pries. — Phil. Treubia, 1926, Suppl., p. 108), typ. subgen. *Neoheegeria mendax* Karny (Marcellia, 1912, p. 122). Subgen. of *Mesothrips* Zimm.
- Paraphysopus* Gir. — Thrip. (Private Publ., Brisbane, 1927), typ. gen. *P. burnsi* Gir. (l.c.). Synonym of *Microcephalothrips* Bagn.
- Parateuchothrips* Moul. — Phil. (Occ. Papers Bishop Mus., 1944, p. 279), typ. gen. *P. fuscus* Moul. (l.c. p. 280). ? Synonym of *Gynaikothrips* Zimm.
- Parathrips* Karny — Thrip. (Berliner Ent. Zeitg., 1907, p. 47), typ. gen. *P. uzeli* Karny (l.c. p. 48) = *Thrips tabaci* Lind. — Synonym of *Thrips* L.

- Parthenothrips Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 170), typ. gen.  
 Heliothrips dracaenae Heeg. (Sitz. Akad. Wiss. Wien, 1852, p. 365).  
 Pathothrips Hood — Phl. (Revista de Ent., 1937, p. 498), typ. subgen.  
 Hoplandrothrips proteus Hood (l.c.). Subgen. of Hoplandrothrips  
 Hood.  
*Pathythrips* Pries. — Thrip. (Wiener Ent. Zeitg., 1914, p. 119), err. typ.  
 f. *Pachythrips* Uz.  
*Paulothrips* Wats. — Phl. (Synopsis, 1923, p. 21), err. typ. for *Phaulothrips*  
 Hood.  
*Paulus* Sol. — Thrip. (Ent. Zeitschr. Frankfurt, 1924), typ. gen. *P. gracilis*  
 Sol. — Synonym of *Thrips* L.  
*Peladothrips* Pries. — Thrip. (Bull. Soc. Fouad I d'Ent., 1940, p. 54)  
 typ. gen. *P. biunculatus* Pries. (l.c. p. 55).  
*Perisothrips* Hood — Thrip. (Ins. Insc. Menstr., 1919, p. 91), typ. gen.  
*P. parviceps* Hood (l.c. p. 92).  
*Pezothrips* Karny — Thrip. (Berl. Ent. Zeit., 1907, p. 45), typ. gen. *Phy-*  
*sopus frontalis* Uz. (Mon. Ord. Thys. 1895, p. 128) = *Taeniothrips*  
 Serv.  
*Phasmothrips* Pries. — Phl. (Konowia, 1933, p. 82), typ. gen. *Ph. asperatus*  
 Pries. (l.c.).  
*Phaulothrips* Hood — Phl. (Mem. Queensld. Mus., 1918, p. 146), typ. gen.  
*Ph. vailleti* Hood (l.c. p. 147).  
*Phibalothrips* Hood — Thrip. (Mem. Queensld. Mus. 1918, p. 125), typ.  
 gen. *Ph. exilis* Hood (l.c.).  
*Philothrips* Pries. — Phl. (Rev. zool. bot. Afric., 1939, p. 60), typ. gen.  
*Ph. socius* Pries. (l.c. p. 61).  
*Phlaeothrips* Hal. — Phl. (Ent. Mag., 1836, p. 442), typ. gen. *Ph. coriaceus*  
 Hal. (l.c.).  
*Phloeobiothrips* Hood — Phl. (Bull. Brooklyn Ent. Soc., 1925, p. 127),  
 typ. gen. *Ph. tumiceps* Hood (l.c.).  
*Phloeothrips* auctt. = *Phlaeothrips* Hal.  
*Phloeothrips* Wats. — Phl. (Synopsis, 1923, p. 48), err. typ. for *Phlaeothrips*  
 Hal.  
*Phoxothrips* Karny — Phl. (Supplementa Ent., 1913, p. 132), typ. gen.  
*Ph. pugilator* Karny (l.c.).  
*Phrasterothrips* Pries. — Phl. (Deutsche Ent. Zeitschr., 1921, p. 210), typ.  
 gen. *Ph. conducens* Pries. (l.c.).  
*Phthirothrips* Pries. — Phl. (Stylops, 1933, p. 154), typ. gen. *Ph. pediculus*  
 Pries. (l.c.).  
*Phylladothrips* Pries. — Phl. (Konowia, 1933, p. 79), typ. gen. *Ph. karnyi*  
 Pries. (l.c. p. 80).

- Phyllothrips* Buffa — Het. (Redia, 1908, p. 123), typ. gen. *Ph. pilosus* Buffa (l.c.). Synonym of *Heterothrips* Hood.
- Phyllothrips* Hood — Phl. (Canad. Ent., 1908, p. 305), typ. gen. *Ph. citricornis* Hood (l.c.). Synonym of *Liothrips* Uz.
- Phyllothripsiolus* Strand — Het. (Int. Ent. Zeit. Guben, 1911, p. 287). Synonym of *Heterothrips* Hood.
- Physapus* auctt. = *Taeniothrips* Serv.
- Physapus* Geer — Thrip. (Svensk. Vet. Akad. Handl., 1776, p. 6). Synonym of *Thrips* L.
- Physopus* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 94). Synonym of *Taeniothrips* Serv., inclusive of other genera.
- Physothrips* Karny — Thrip. (Zool. Annal., 1912, p. 336), typ. gen. *Physopus ulmifoliorum* Uz. (nec. Hal.) (Mon. Ord. Thys., 1895, p. 122-124). Synonym of *Taeniothrips* Serv.
- Plagiomelanthrips* Melis — Aeol. (Redia, 1934, p. 34). Synonym of *Melanthrips* Hal.
- Platythrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 214), typ. gen. *Thrips tunicata* Hal. (Hom. Ins. Brit. Mus., 1852, p. 1115).
- Plectothrips* Moul. — Phl. (Revista de Ent., 1932, p. 458), err. typ. for *Plectrothrips* H.
- Plectrothrips* Hood — Phl. (Bull. Illin. State Lab., 1908, p. 370), typ. gen. *P. antennatus* Hood (l.c.).
- Plesiothrips* Hood. — Thrip. (Proc. Ent. Soc. Wash., 1915, p. 129), typ. gen. *Sericothrips* (?) *perplexa* Beach (Proc. Iowa Acad. Sci., 1896, p. 216).
- Plutonothrips* Pries. — Thrip. (Konowia, 1933, p. 308), typ. gen. *P. cuspidatus* Pries. (l.c.).
- Podaeolella* Pries. — Aeol. (Thys. Eur., 1926, p. 114), typ. subgen. *Aeolothrips versicolor* Uz. (Mon. Ord. Thys., 1895, p. 69). Synonym of *Aeolothrips* Hal.
- Podothrips* Hood — Phl. (Ins. Insc. Menstr., 1919, p. 67), typ. gen. *P. semiflavus* Hood (l.c. p. 68).
- Poecilothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 264), typ. gen. *P. albopictus* Uz. (l.c.).
- Poëthrips* Faure — Thrip. (Bull. Brooklyn Ent. Soc., 1933, p. 3), typ. gen. *P. furcatus* Faure (l.c. p. 4).
- Polygonimatothrips* Buffa — Phl. (Redia, 1909, p. 164), typ. gen. *P. silvestrii* Buffa (l.c.). Synonym of *Eupathithrips* Bagn.
- Polyphemothrips* Schmutz — Phl. (Annal. Mus. Wien, 1909, p. 276), typ. gen. *P. brasiliensis* Schmutz (l.c.).
- Polyporothrips* Wats. — Phl. (Florida Ent., 1927, p. 61), typ. gen. *Poly-*

- porothrips longipilosus Wats. (l.c. p. 62) = Hoplothrips angusticeps Hood. — Synonym of Hoplothrips Serv.
- Polytrichothrips Pries. — Phl. (Proc. R. Ent. Soc. London, 1939, p. 77), typ. gen. *P. pilosus* Pries. (l.c.).
- Porphyrothrips* Vuill. — Phl. (Insecta, 1913, p. 77), typ. gen. *P. cottei* Vuill. — Synonym of Hoplothrips Serv.
- Praedendrothrips* Pries. — Thrip. (Ent. Mitteil., 1924, p. 139), typ. gen. *P. avus* Pries. (l.c.). Fossil.
- Praemerothrips* Pries. — Mer. (Bernsteinforsch. Königsberg, 1929, p. 139), typ. gen. *P. hoodi* Pries. (l.c.). Fossil.
- Preeriella* Hood — Phl. (Revista de Ent., 1939, p. 612), typ. gen. *P. minuta* Hood (l.c. p. 613).
- Priesneria* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1926, p. 549), typ. gen. *P. kellyana* Bagn. (l.c.).
- Priesneria* Maltb. — Thrip. (Haderslev Kathedralsk. Aarskr., 1928, p. 2) typ. gen. *P. mancosetosa* Maltb. (l.c.). Synonym of Thrips L.
- Priesneriella* Hood — Phl. (Proc. Biol. Soc. Wash., 1927, p. 198), typ. gen. *P. citricauda* Hood (l.c. p. 199).
- Prionothrips* Schille — Aeol. (Akad. Wiss. Krakow, 1910), typ. gen. *P. niezabitoskii* Sch. (l.c.). Subgen. of Ankothrips D.L. Crawford.
- Pristothrips* Hood — Phl. (Psyche, 1925, p. 61), typ. gen. *P. aaptus* Hood (l.c. p. 62).
- Probolothrips* Moul. — Phl. (Revista de Ent., 1941, p. 320), typ. gen. *P. hambletoni* Moul. (l.c.).
- Procerothrips* Bagn. — Thrip. (Ent. Mo. Mag., 1924, p. 252), typ. gen. *P. cylindricornis* Bagn. (l.c.). Fossil.
- Projectothripoides* Shumsher — Thrip. (Ind. Journ. Ent., 1942, p. 10), typ. subgen. *P. pandai* Shumsh. (l.c.). Subgenus of Dendrothripiella Bagn.
- Projectothrips* Moul. — Thrip. (Rec. Ind. Mus., 1929, p. 95), typ. gen. *P. pruthi* Moul. (l.c. p. 96).
- Proleeuwenia* Pries. — Phl. (Ent. Mitteil., 1924, p. 48), typ. gen. *P. succini* Pries. (l.c.). Fossil.
- Prolisothrips* Morg. — Phl. (Florida Ent., 1925, p. 5), typ. subgen. *P. stratulus* Morg. (l.c.). Subgen. of Lissothrips Hood.
- Promelanthrips* Pries. — Aeol. (Bernsteinforsch. Königsberg, 1929, p. 112), typ. gen. *P. spiniger* Pries. (l.c. p. 113). Fossil.
- Proscirtothrips* Karny — Thrip. (Treubia, 1921, p. 237), typ. subgen. *Anaphothrips zeae* Moul. (Synopsis, 1911, p. 41). Subgen. of Anaphothrips Uz.
- Prosopoanaphothrips* Moul. — Thrip. (Pan-Pacif. Ent., 1926, p. 22), typ.

- gen. *Sericothrips reticulatus* Moul. (U.S. Dept. Agric., Techn. Ser. 12, 1907, p. 50).
- Prosopothrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 165), typ. gen. *P. vejvodskyi* Uz. (l.c. p. 166).
- Prosothrips* Tryb. — Thrip. (Festschr. f. Lilljeborg, 1896, p. 219), err. typ. for *Prosopothrips* Uz.
- Protemnothrips* Hood — Het. (Revista de Ent., 1937, p. 258), typ. subgen. *Heterothrips miconiae* Hood (l.c.). Subgen. of *Heterothrips* Hood.
- Protothrips* Pries. — Het. (Ent. Mitteil., 1924, p. 136), typ. gen. *P. speratus* Pries. (l.c.). Synonym of *Hemithrips* Bagn.
- Protoxythrips* Pries. — Thrip. (Bernsteinforsch. Königsberg, 1929, p. 129), typ. subgen. *Oxythrips divisus* Hood (Ins. Insc. Menstr., 1916, p. 39). Subgen. of *Oxythrips* Uz.
- Pruthiella* Shumsh. — Thrip. (Ind. Journ. Ent., 1942, p. 7), typ. gen. *Limothrips angulicornis* Jabl. — Subgen. of *Limothrips* Hal.
- Psalidothrips* Pries. — Phl. (Konowia, 1932, p. 61), typ. gen. *P. amens* Pries. (l.c. p. 62).
- Psectrothrips* Hood — Thrip. (Revista de Ent., 1937, p. 262), typ. gen. *P. delostomae* Hood (l.c. p. 263).
- Pselaphothrips* Hood — Phl. (Psyche, 1916, p. 10), typ. gen. *P. pomeroyi* Hood (l.c. p. 11).
- Pseudaeclothrips* Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1932, p. 290), typ. gen. *P. cameroni* Bagn. (l.c.).
- Pseudanaphothrips* Karny — Thrip. (Treubia, 1921, p. 242), typ. gen. *Pseudothrips achaetus* Bagn. (Ann. Mag. Nat. Hist., 1916, p. 398).
- Pseudoarticulella* Shumsh. — Thrip. (Ind. Journ. Ent., 1942, p. 14), typ. gen. *Thrips obscura* Müll. (Zool. Dan. Prodr., 1776, p. 96). Synonym of *Anaphothrips* Uz.
- Pseudocryptothrips* Pries. — Phl. (Zeit. öst. Ent. Ver., 1919, p. 105), typ. gen. *P. meridionalis* Pries. (l.c.).
- Pseudodendrothrips* Schmutz — Thrip. (Sitz. Akad. Wiss. Wien, 1913, p. 998), typ. gen. *P. ornatissimus* Schm. (l.c. p. 999).
- Pseudonaphothrips* Newm. — Thrip. (Journ. Soc. West. Austral., 1935, p. 96), err. typ. for *Pseudanaphothrips* Karny.
- Pseudothrips* Hinds — Thrip. (Monogr., 1902, p. 146), typ. gen. *Thrips inequalis* Beach (Proc. Iowa Acad. Sci., 1895, p. 223).
- Pseudoxythrips* Pries. — Thrip. (Bull. Soc. Fouad I Ent., 1940, p. 51), typ. subgen. *Oxythrips dentatus* Knecht. (Thys. Roman., 1923, p. 118). Subgen. of *Oxythrips* Uz.
- Psilothrips* Hood — Thrip. (Proc. Biol. Soc. Wash., 1927, p. 198), typ. gen. *P. pardalotus* Hood (l.c.).



- Pteridothrips* Pries. — Thrip. (Treubia, 1938, p. 504), typ. gen. *Physothrips pteridicola* Karny (Zeit. wiss. Ins.-Biol., 1914, p. 368; 1915, p. 34).
- Pterothrips* Hood — Thrip. (Mem. Queensld. Mus., 1918, p. 123), typ. gen. *P. quadratus* Hood (l.c. p. 124). Synonym of *Australothrips* Bagn.
- Pyctothrips* Pries. — Thrip. (Rev. Zool. Bot. Afric., 1939, p. 165), typ. gen. *P. albizziae* Pries. (l.c. p. 156).
- Pygaoletta* Pries. — Aeol. (Thys. Eur., 1926, p. 101), typ. subgen. *Aeolothrips albicincta* Hal. (Ent. Mag., 1836, p. 451). Synonym of *Aeolothrips* Hal.
- Pygidiothrips* Hood — Phl. (Revista de Ent., 1938, p. 389), typ. gen. *P. seminole* Hood (l.c. p. 390).
- Pygmaethrips* Karny — Phl. (Soc. Ent. Cech., 1920, p. 40), typ. gen. *P. columniceps* Karny (l.c.).
- Pygothrips* Hood — Phl. (Proc. Biol. Soc. Wash., 1915, p. 49), typ. gen. *P. rugicauda* Hood (l.c. p. 50).
- Pyrgothrips* Karny — Phl. (Ark. f. Zool., 1924, p. 35), typ. gen. *P. conocephalus* Karny (l.c. p. 36, 51).
- Ramakrishnaiella* Karny — Phl. (Mem. Dept. Agric. Ind., 1926, p. 232), typ. gen. *R. unispina* Karny (l.c.).
- Ramakrishnothrips* Shumsh. — Thrip. (Ind. Journ. Ent., 1942, p. 6), typ. gen. *Taeniothrips jonnaphilus* Ram. (Mem. Dept. Agr. Ind., 1928, p. 256).
- Ramaswamiahiella* Karny — Thrip. (Mem. Dept. Agr. Ind., 1926, p. 208), typ. gen. *R. subnudula* Karny (l.c.).
- Reticulothrips* Faure — Thrip. (Journ. Nat. Hist. S. Afr., 1925, p. 144), typ. gen. *R. peringueyi* Faure (l.c. p. 145). Synonym of *Phibalothrips* Hood.
- Retithrips* March. — Thrip. (Bull. Soc. Ent. d'Egypte, 1910, p. 7), typ. gen. *Heliothrips syriacus* Mayet (Ins. de la Vigne, 1890, p. 451).
- Rhabdothrips* Hood — Thrip. (Proc. Ent. Soc., Wash., 1933, p. 45), typ. gen. *Rh. albus* Hood (l.c. p. 46).
- Rhaebothrips* Karny — Phl. (Supplem. Ent., 1913, p. 128), typ. gen. *Rh. lativentris* Karny (l.c. p. 129).
- Rhamphothrips* Karny — Thrip. (Zool. Anz., 1912), typ. gen. *Rhynchothrips tenuirostris* Karny (l.c. p. 297).
- Rhaphidothrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 131), typ. gen. *Rh. longistylus* Uz. (l.c.).
- Rhaptothrips* D.L. Crawford. — Phl. (Pomona Coll. Journ., 1909, p. 116), typ. gen. *Rh. peculiaris* D.L. Crawford. (l.c.). Larva *Phlaeothripidarum*.

- Rhinoceps* Faure — Phl. (Ent. Mem. Dept. Agr. Pretoria, 1949, p. 203), typ. gen. *Rh. jansei* Faure (l.c. p. 204).
- Rhinothrips* Faure — Thrip. (Bull. Brooklyn Ent. Soc., 1933, p. 7), typ. gen. *Rh. rostratus* Faure (l.c. p. 8).
- Rhipidothripiella* Bagn. — Aeol. (Ann. Mag. Nat. Hist., 1932, p. 292), typ. gen. *Rhipidothrips turneri* Moul. (ibidem, 1930, p. 197).
- Rhipidothripoides* Bagn. — Aeol. (Ent. Mo. Mag., 1923, p. 36), typ. gen. *Rh. abdominalis* Bagn. (l.c.). Fossil.
- Rhipidothrips* Uz. — Aeol. (Mon. Ord. Thys., 1895, p. 66), typ. gen. *Rh. graciosus* Uz. (l.c. p. 67).
- Rhipiphorothrips* Morg. — Thrip. (U.S. Dept. Agric., 1913, p. 17), typ. gen. *Rh. pulchellus* Morg. (l.c.).
- Rhopalandrothrips* Pries. — Thrip. (Sitz. Akad. Wiss. Wien, 1922, p. 68), typ. gen. *Thrips consociata* Targ-Tozz. (Bull. Soc. Ent. Ital., 1886, p. 425).
- Rhopalothripoides* Bagn. — Phl. (Trans. Ent. Soc. London, 1929, p. 174), typ. gen. *Rh. brunneus* Bagn. (l.c.).
- Rhopalothrips* Hood — Phl. (Proc. Biol. Soc. Wash., 1912, p. 72), typ. gen. *Rh. bicolor* Hood (l.c. p. 73).
- Rhynchothrips* Hood — Phl. (Proc. Ent. Soc. Wash., 1912, p. 141), typ. gen. *Rh. pruni* Hood (l.c. p. 142).
- Rhynchothrips* Karny — Thrip. (Zool. Anz. 1912, p. 297) = *Rhamphothrips* Karny.
- Rhynchothrips* Moul. and Steinw. — Phl. (Proc. Nat. Hist. Soc. Fukien Univ., 1930, p. 11), err. typ. for *Rhynchothrips* Hood.
- Rhytidothrips* Karny — Thrip. (Mitt. Nat. Ver. Wien, 1910, p. 49), typ. gen. *Rh. bicornis* Karny (l.c.). Synonym of *Sericothrips* Hal.
- Saccharothrips* Pries. — Thrip. (Nat. Tijdschr. Ned. Ind., 1934, p. 282), typ. gen. *Thrips serratus* Kobus (Meeded. Proefstat. Oost-Java, 1892, p. 43). Synonym of *Fulmekiola* Karny.
- Sagenothrips* Pries. — Phl. (Konowia, 1933, p. 72), typ. gen. *S. gracili-cornis* Pries. (l.c. p. 73).
- Salpingothrips* Hood — Thrip. (Journ. New York Ent. Soc., 1935, p. 157), typ. gen. *S. minimus* Hood (l.c. p. 158).
- Schizeia* Faure — Phl. (Ent. Mem. Dept. Agr. Pretoria, 1949, p. 212), typ. gen. *Sch. chaberti* Faure (l.c. p. 215). Synonym of *Streptothrips* Pr.
- Schlechtendalia* Bagn. — Phl. (Ent. Mo. Mag., 1929, p. 96), typ. gen. *Sch. longitubus* Bagn. (l.c.). Fossil.
- Scholothrips* Newm. — Thrip. (Journ. West. Austral., 1935, p. 96), err. typ. for *Scolothrips* Hinds.

- Scirtothrips* Shull — Thrip. (Ent. News, 1909, p. 222), typ. gen. *S. ruth. veni* Shull (l.c.).
- Scotlothrips* Hinds — Thrip. (Monogr., 1902, p. 157), typ. gen. *S. sexmaculatus* Hinds (l.c.).
- Scopaeothrips* Hood — Phl. (Proc. Biol. Soc. Wash., 1912, p. 70), typ. gen. *S. unicolor* Hood (l.c. p. 71).
- Scotothrips* Pries. — Phl. (Proc. R. Ent. Soc. London, 1938, p. 75), typ. gen. *Adiaphorothrips elephas* Karny (Soc. Ent. Cech., 1920, p. 43).
- Sedulothrips* Bagn. — Phl. (Linn. Soc. Journ., 1915, p. 503), typ. gen. *S. insolens* Bagn. (l.c.).
- Seirtothrips* Newm. — Thrip. (Journ. Soc. West. Austral., 1935, p. 96), err. typ. for *Scirtothrips* Shull.
- Selenothrips* Karny — Thrip. (Ent. Rundschau, 1911, p. 180), typ. gen. *Physopus rubrocincta* Giard (Agr. News Barbados, 1913, p. 58).
- Sericopsothrips* Hood — Thrip. (Journ. New York Ent. Soc., 1936, p. 83), typ. gen. *S. palloris* Hood (l.c.).
- Sericothripoides* Bagn. — Thrip. (Bull. Ent. Res., 1929, p. 69), typ. gen. *Dendrothrips bispinosus* Bagn. (Bull. Ent. Res., 1924, p. 455). Synonym of *Scirtothrips* Shull.
- Sericothrips* Hal. — Thrip. (Ent. Mag., 1936, p. 444), typ. gen. *S. staphylinus* Hal. (l.c.).
- Simyothrips* Wats. — Thrip. (Synopsis, 1923, p. 13), err. for *Sminyothrips* Uz.
- Siphonothrips* Buffa — Phl. (Redia, 1907, p. 389), typ. gen. *S. elegans* Buffa (l.c.).
- Sitothrips* Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1931, p. 127), typ. gen. *S. arabicus* Pries. (l.c.).
- Smeringothrips* Pries. — Thrip. (Treubia, 1938, p. 507), typ. gen. *S. salaciae* Pries. (l.c.).
- Smerinthothrips* Schmutz — Phl. (Ann. Mus. Wien, 1909, p. 342), typ. gen. *S. tropicus* Schmutz (l.c.).
- Sminyothrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 206), typ. gen. *S. biuncinatus* Uz. (l.c. p. 207).
- Sophiothrips* Hood — Phl. (Journ. New York Ent. Soc., 1933, p. 425), typ. gen. *S. squamosus* Hood (l.c. p. 426).
- Sorghothrips* Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1936, p. 88), typ. gen. *Thrips longistylus* Tryb. (Swed. Exped. Egypt, etc., Uppsala, 1911, p. 8).
- Spathiothrips* Richter — Aeol. (Deutsche Ent. Zeit., 1928, p. 31), typ. gen. *S. bischoffi* Richt. (l.c. p. 33). Synonym of *Franklinothrips* Back.
- Sphaeropothrips* Pries. — Thrip. (Konowia, 1928, p. 322), typ. gen. *S.*

- inauditus Pries. (l.c.) = *Baliothrips vittipennis* Bagn. (monstr.). Synonym of *Baliothrips* Uz.
- Spilothrips* Moul. — Phl. (Bull. S. Calif. Acad. Sci., 1942, p. 6), typ. gen. *S. varicolor* Moul. (l.c. p. 7).
- Sporothrips* Hood — Phl. (Revista de Ent., 1938, p. 410), typ. gen. *Adiaphorothrips amplus* Hood (Canad. Ent., 1925, p. 221).
- Stegothrips* Hood — Phl. (Proc. Ent. Soc. Wash., 1934, p. 111), typ. gen. *S. barronis* Hood, (l.c. p. 112).
- Stenchaetothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1926, p. 107), typ. gen. *S. melanurus* Bagn. (l.c. p. 108).
- Stenothrips* Uz. — Thrip. (Mon. Ord. Thys., 1895, p. 209), typ. gen. *S. graminum* Uz. (l.c. p. 210).
- Stenurothrips* Bagn. — Het. (Geol. Mag., 1914, p. 484), typ. gen. *S. succineus* Bagn. (l.c.). Fossil.
- Stephanothrips* Tryb. — Phl. (Ark. f. Zool., 1912, p. 42), typ. gen. *S. buffai* Tryb. (l.c. p. 43).
- Stictothrips* Hood — Phl. (Psyche, 1924, p. 295), typ. gen. *Phloeothrips maculatus* Hood (Ent. News, 1909, p. 250).
- Stomatothrips* Hood — Aeol. (Proc. Biol. Soc. Wash., 1912, p. 63), typ. gen. *S. flavus* Hood (l.c. p. 64).
- Streptothrips* Hood — Phl. (Journ. New York Ent. Soc., 1933, p. 431), typ. gen. *S. conradi* Hood (l.c.).
- Streptothrips* Pries. — Phl. (Konowia, 1932, p. 58), typ. gen. *S. mirabilis* Pries. (l.c.).
- Stulothrips* Moul. — Thrip. (Proc. Ent. Soc. Hawaii, 1934, p. 499), typ. gen. *trespinus* Moul. (l.c. p. 500). Subg. of *Docidothrips* Pries.
- Stylothrips* Bondar — Thrip. (Correio Agric., 1924, p. 46). Synonym of *Retithrips* March.
- Stylothrips* Karny — Thrip. (Mem. Dept. Agr. Ind., 1926, p. 205), typ. gen. *S. brevipalpis* Karny (l.c. p. 206). Synonym of *Microcephalothrips* Bagn.
- Sunaitiothrips* Moul. — Phl. (Bull. S. Calif. Acad. Sci., 1942, p. 1), typ. gen. *S. fuscus* Moul. (l.c. p. 2).
- Symphothrips* Wats. — Phl. (Synopsis, 1923, p. 20), err. typ. for *Symphothrips* Hood and Will.
- Symphothrips* Hood and Will. — Phl. (Journ. New York Ent. Soc., 1915, p. 131), typ. gen. *S. punctatus* Hood and Will. (l.c.).
- Synaptothrips* Tryb. — Thrip. (Schultze Südaf. Exped., 1910, p. 155), typ. gen. *crassicornis* Tryb. (l.c. p. 156).
- Syncerothrips* Hood — Phl. (Revista de Ent., 1935, p. 191), typ. gen. *S. harti* Hood (l.c. p. 192).

- Synkleothrips Pries. — Phl. (Konowia, 1935, p. 330), typ. subgen. Kleothrips innocens Pries. (l.c. p. 331).
- Syringothrips Pries. — Phl. (Konowia, 1933, p. 77), typ. gen. S. gallicola Pries. (l.c.).
- Taeniothrips Serv. — Thrip. (Ins. Hémipt., 1843, p. 644), typ. gen. Thrips picipes Zett. (Faun. Ins. Lapon., 1828, p. 561).
- Telothrips Pries. — Thrip. (Bernsteinforsch. Königsberg, 1929, p. 116), typ. gen. T. klebsi Pries. (l.c. p. 117). Fossil.
- Terthrothrips Karny — Phl. (Notul. Ent., 1925, p. 78), typ. gen. Phleoethrips sanguinolentus Bergr. (Ann. Soc. Ent. Belg., 1896, p. 66).
- Tetracanthothrips Bagn. — Phl. (Ann. Mag. Nat. Hist., 1915, p. 594), typ. gen. T. borneensis Bagn. (l.c. p. 595).
- Tetraceratothrips Bagn. — Phl. (Ann. Mag. Nat. Hist., 1924, p. 628), typ. gen. T. agrestis Bagn. (l.c.).
- Tetrachaetothrips* Bagn. — Phl. (i.sched.). Synonym of Gynaikothrips Zimm.
- Tetragonothrips Moul. — Phl. (Bishop. Mus. Hawaii, 1940, p. 262), typ. gen. T. murmekiai Moul. (l.c. p. 263).
- Teuchothrips Hood — Phl. (Proc. Biol. Soc. Wash., 1919, p. 86), typ. gen. T. simplicipennis Hood (l.c.).
- Thamnothrips* Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1932, p. 2), typ. gen. Th. bimaculatus Pries. (l.c. p. 3), Synonym of Psilothrips Hood.
- Thaumatothrips Karny — Phl. (Proc. Linn. Soc. N.S. Wales, 1922, p. 267), typ. gen. Th. froggatti Karny (l.c. p. 268).
- Thermothrips Pelikán — Thrip. (in the press). Subg. of Anaphothrips Uz.
- Thilakothrips Ram. — Phl. (Contr. Knowl. Thys. Ind., 1928, p. 275), typ. gen. Th. babuli Ram. (l.c.).
- Thorybothrips Pries. — Phl. (Sitz. Akad. Wiss. Wien, 1924, p. 540), typ. gen. Cryptothrips unicolor Schille (1910).
- Thrips L. — Thrip. (Fauna Svec., 1761), typ. gen. Thrips physapus L. (l.c. p. 266).
- Tiarothrips Pries. — Phl. (Konowia, 1935, p. 251), typ. gen. Kleothrips subramanii Ram. (Journ. Bombay Nat. Hist. Soc., 1925, p. 2 [Sep.]).
- Titanothrips Karny — Phl. (Soc. Ent. Cech., 1920, p. 44), typ. gen. T. portentosus Karny (l.c.).
- Tmetothrips Serv. — Thrip. (Hist. Nat. Ins. Hémipt., 1843, p. 645), typ. gen. Thrips subaptera Hal. (Ent. Mag., 1836, p. 450).
- Toxonothrips Moul. — Thrip. (Pan-Pacif. Ent., 1927, p. 30), typ. gen. T. gramineae Moul. (l.c.).
- Trachythrips Hood — Phl. (Bull. Brooklyn Ent. Soc., 1929, p. 317), typ. gen. T. watsoni Hood (l.c.).



- Treherniella* Wats. — Phl. (Synopsis, 1923, p. 81), typ. gen. *Haplothrips orlando* Wats. & Osb. (Florida Buggist, 1918, p. 116).
- Trichaplothrips* Pries. — (Treubia, 1922, p. 17), typ. gen. *T. sus* Pries. (l.c. p. 18). Synonym of *Mesothrips* Zimm.
- Trichinothrips* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1929, p. 604), typ. gen. *T. branderi* Bagn. (l.c. p. 605).
- Trichothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 246), typ. gen. *Phloeothrips pedicularius* Hal. (Ent. Mag., 1836, p. 441). Synonym of *Hoplothrips* Serv.
- Trichromothrips* Pries. — Thrip. (Bull. Soc. R. Ent. d'Egypte, 1930, p. 9), typ. gen. *T. bellus* Pries. (l.c.).
- Trybomia* Karny — Phl. (Zool. Anz., 1911, p. 503), typ. gen. *T. phasma* Karny (l.c. p. 504).
- Trybomiella* Bagn. — Phl. (Ann. Mag. Nat. Hist., 1926, p. 548), typ. subgen. *Anthothrips bagnalli* Tryb. (Schultze Südafr. Exped., 1910, p. 165). Subgen. of *Haplothrips* Serv.
- Tryphactothrips* Bagn. — Thrip. (Ann. Mag. Nat. Hist., 1921, p. 264), typ. gen. *Dinurothrips rutherfordi* Bagn. (Ann. Mag. Nat. Hist., 1915, p. 319).
- Tylothrips* Hood — Phl. (Revista de Ent., 1937, p. 494), typ. gen. *T. concolor* Hood (l.c. p. 495).
- Urothrips* Bagn. — Phl. (Ann. Mus. Nat. Hung., 1909, p. 126), typ. gen. *U. paradoxus* Bagn. (l.c. p. 127).
- Uzelicella* Bagn. — Thrip. (Ent. Mo. Mag., 1908, p. 126), typ. gen. *U. lubbocki* Bagn. (l.c.) = *Aptinothrips rufus* Gmel. — Synonym of *Aptinothrips* Hal.
- Veerabahuthrips* Ram. — Phl. (Rec. Ind. Mus., 1932, p. 278), typ. gen. *V. bambusae* Ram. (l.c.).
- Vuilletia* Karny — Phl. (Treubia, 1923, p. 288), typ. gen. *Trichothrips houardi* Vuill. (Insecta, 1914, p. 123).
- Watsoniella* Karny — Phl. (Treubia, 1923, p. 376), typ. gen. *Cephalothrips elongata* Wats. (Florida Buggist, 1919, p. 2) = *Haplothrips flavipes* Jones.
- Williamsiella* Hood — Phl. (Psyche, 1925, p. 60), typ. gen. *W. bicoloripes* Hood (l.c.).
- Xestothrips* Pries. — Thrip. (Rev. Zool. Bot. Afric., 1938, p. 343), typ. subgen. *Selenothrips glabratus* Pries. (Boll. Lab. Zool. Portici, 1928, p. 63). Subgen. of *Selenothrips* Karny.
- Xylaplothrips* Pries. — Phl. (Thys. Eur., 1928, p. 572), typ. gen. *Cryptothrips fuliginosus* Schille (Akad. Wiss. Krakow, 1910, p. 7).

- Zuctinothrips* Hood — Phl. (Revista de Ent., 1936, p. 446), typ. gen. *Z. elegans* Hood (l.c. p. 447).
- Zaliothrips* Hood — Phl. (Revista de Ent., 1938, p. 396), typ. gen. *Z. citripes* Hood (l.c. p. 387).
- Zaxenothrips* J.C. Crawford. — Phl. (Proc. Ent. Soc. Wash., 1943, p. 221) typ. gen. *Z. peculiaris* J.C. Crawford. (l.c.).
- Zeuglothrips* Hood — Phl. (Revista de Ent., 1936, p. 452), typ. gen. *Z. echinus* Hood (l.c. p. 453).
- Zeugmatothripoides* Bagn. — Phl. (Bull. Ent. Res., 1929, p. 71), typ. gen. *Z. africanus* Bagn. (l.c. p. 72).
- Zeugmatothrips* Pries. — Phl. (Zool. Jahrb., 1925, p. 313), typ. gen. *Z. hispidus* Pries. (l.c. p. 314).
- Zonothrips* Pries. — Thrip. (Treubia, 1926, Suppl., p. 260), typ. gen. *Z. karnyi* Pr. (l.c.).
- Zuluella* Jacot-Guill. — Phl. (Journ. Ent. Soc. S. Afr., 1939, p. 37), typ. gen. *Z. distincta* Jacot-Guill. (l.c. p. 38).
- Zygothrips* Uz. — Phl. (Mon. Ord. Thys., 1895, p. 243), typ. gen. *Z. minuta* Uz. (l.c.). Synonym of *Haplothrips* Serv.

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# Studies on the genus *Chirothrips* Hal.

[ Thysanoptera ]

(with 7 Text-Figures)

by Prof. Dr. H. PRIESNER

Several contributions to our knowledge of the palaearctic species of this genus were published shortly after my own treatment of this subject in "Thys. Eur." (1926). Those papers considerably facilitated the following review.

In 1927, Bagnall described *Ch. meridionalis* (Ann. Mag. Nat. Hist. ser. 9, XIX, p. 566) and *Ch. ammophilae* (t.c., XX, p. 567). In 1928, Morison (Ent. Mo. Mag., LXIV, pp. 189-193) gave precise notes on *Ch. manicatus* Hal. and *similis* Bagn., discussing the probability of *similis* being identical with *manicatus*. In 1932, I described *Ch. africanus* from Egypt (Bull. Soc. Roy. Ent. d'Egypte, p. 46) and mentioned *Ch. meridionalis* from this country. The same year, Bagnall introduced (Ent. Mo. Mag., LXVIII, p. 184-187) *Ch. aethiops*, *similis* var. *productus*, *ambulans*, *laingi*, *aculeatus* and *angusticornis*. In 1938, I raised *manicatus* var. *pallidicornis* to the rank of species, and also described *Ch. ruptipennis* (Kono-wia, XVII, pp. 24-27). Somewhat later the same year appeared Hood's exact illustrated descriptions of *Ch. cypriotes* (Ent. Mo. Mag., LXXIV, p. 57), *Ch. insularis* and *Ch. bagnalli* (t.c., pp. 158-164).

The actual motive of the present review was v. Oettingen's footnote on p. 108 of his excellent paper of 1942 (Die Thysanopteren des Nord-deutschen Graslandes (Ent. Beihefte Berlin-Dahlem, 9), in which this author throws doubt on the specific value of certain forms around *manicatus*. In the following brief comparative characterisations I am trying to show that we have to deal in this genus with a good series of quite indisputable species offering a host of constant characters, though requiring careful attention to be adequately appreciated. The keys given at the end of this paper will, I trust, facilitate identification. As some of the species are, or may become, of economic importance, I need not point out that an exact characterisation of the members of this genus, enabling us to distinguish them with certainty, and to acknowledge their taxonomic status, has to be the forerunner to any biological study.

Systematically, the genus may be divided into species groups; but I consider such a procedure as premature, as we do not know yet which of the characters are the most important ones, genetically. The structure of the pronotum and its chaetotaxy may be more valuable than the shape of the sense-cones or that of the tenth abdominal segment. For the moment, it seems to me more important that we can distinguish the species with certainty, and reach some stability in nomenclature.

As usual, the antennae offer a number of characteristic features. The sense-cones may be forked (on joint 4) or simple. In *meridionalis*, they are forked in both sexes, in *angusticornis* (and most likely in *aculeatus*) and in the unnamed species (No. 6) from Switzerland, they are forked in the female only. All other known palaearctic species have simple sense-cones. The size and shape of joint 1 and 2 and the chaetotaxy of the latter are absolutely constant in the different species. The production of the head in front of the eyes scarcely varies in the individuals of one species, though it may differ in both sexes. The chaetotaxy of the produced part of the vertex has also to be taken into account. The pronotum shows on its dorsal surface a structure consisting of fine transversal striae which are very closely set and more regular in certain species (e.g. *angusticornis*, *pedestris*) than in others (*manicatus*, *ruptipennis*), where they are more widely spaced and irregular, reminding of the 'scallops' on the fore angles of the mesosternum, mentioned by Hood (1938, Ent. Mo. Mag. LXXIV) the first time; the latter are inconspicuous or wanting in many species, well developed in *manicatus*, *africanus* and *pallidicornis*, but especially conspicuous in *ruptipennis*. The lengths of the postero-angular bristles of the prothorax as well as the arrangement of the minute discal setae are of importance. The prothoracic bristles do vary somewhat (e.g. in *manicatus*), and with them the lengths of the antennal joints, particularly the stylus. The number of the lower vein bristles of the fore wing seems to be of little significance. The structure of the hind margins of the abdominal sternites, i.e. a comb of small pointed teeth or rounded warts, is of importance, as is the position of the pair of micro-pores, e.g., on tergite VIII, these pores being situated between the dorsal bristles (1 and 2) in *meridionalis*, *molestus* and *cypristes*, whilst they are placed in front of bristle 1, in *africanus*, *ammophilae*, *angusticornis*, *laingi*, *manicatus*, *ambulans*, *pallidicornis* and *ruptipennis*. *Ch. molestus* is peculiar, in having a row of closely set pores at the hind margins of the sternites. The lengths of the bristles on segments IX and X of the abdomen represent a valuable character, and the shape of segment X is important for the distinction of the species, the more as it is very easily perceptible.



In the *males*, the triangular shape of antennal joint 2 is usually not so marked as in the females, especially in the brachypterous or apterous males. In *angusticornis* and *pedestris*, antennal 2 of the male is not drawn out at apex, but is somewhat more asymmetrical than in *hamatus*. The form of the glandular areas of the sternites are most useful for the separation of the species.

In all species except two, the wings are normally developed in the female sex. The male of *meridionalis* is macropterous, all other males, as far as known, are either brachypterous or apterous, viz., those of *cypristes*, *hamatus*, *angusticornis*, *pedestris*, *manicatus*, *africanus*, *insularis* and *molestus*. Conspicuous wing pads possess *cypristes*, *africanus* and *manicatus*; they are small in the two latter species (32-48  $\mu$ ), much larger (120  $\mu$ ) in *cypristes*. I have not seen apterous males of *manicatus*, thus all previous statements (e.g., Thys. Eur., p. 140) on the male of *manicatus* being apterous, are incorrect. The males of *hamatus* are practically apterous, they show but the minute sclerites of the wing base, bearing 5 small setulae; *molestus* shows a very small wing pad (44-48  $\mu$ ) which is easily overlooked; *angusticornis* and *pedestris* are apterous, with basal sclerite bearing three small setulae; *insularis* has very small rudiments of wing pads (28  $\mu$ ).

Of the two — in the female sex — brachypterous forms, *ambulans* and *manicatus* f. brach., the former is entirely different from the latter, and was said to be apterous, by Schille, Bagnall and myself. Actually, the wing pads are extremely short and, therefore, easily overlooked; they are much less conspicuous than in the males of *manicatus*. The brachypterous form of *Ch. manicatus*, as described below, was mentioned by Morrison (Ent. Mo. Mag., LXIV, p. 191, 1928) and Maltbaek (Danmarks Fauna, 37, 1932, p. 39).

The score of specimens at hand, of *ruptipennis*, appearing brachypterous, had the wings originally fully developed; they were irregularly cut or torn off behind base, obviously by the action of the sharp-edged glumes of the host plant (*Poa nemoralis*), the inflorescences of which are frequented by this *Chirothrips* species (cf. Konowia, XVII, p. 26, 1938). Apart from these partly de-alated specimens, one may find single completely de-alated ones of any other species. Karny's *manicatus* f. aptera (1926, Priesner, Thys. Eur., p. 139, p.p.) is such a one. It was erroneously attributed to *ambulans*, by Bagnall (Ent. Mo. Mag., LXVIII, p. 185, 1932); the specimen in question which I was able to examine is in no way different from *manicatus* except that the wings are missing; they were lost by some reason or other.

### 1. *Chirothrips hamatus* Trybom

(Trybom, 1895, Ent. Tidskr., XV, p. 187; Reuter, 1899, Act. Soc. Flor. Faun. Fenn., XVII, p. 63; Priesner, Thys. Eur., 1926, p. 137; Hukkinen, 1935, Ann. Ent. Fenn., I, pp. 88-90; idem, 1936, Staatl. landw. Versuchsst., Publ. 81, pp. 1-131, figs.).

Synonym: *Ch. dudae* Uzel (1895, Mon. Thys., p. 83).

The female is always macropterous, the male practically apterous. Apterous females were mentioned by Hukkinen (l.c., 1935, p. 89), but the specimens concerned are de-alated ones. Hukkinen (1936, t.c.) has thoroughly studied life history and economic status of this species.

Distribution: Europa, Siberia.

### 2. *Chirothrips meridionalis* Bagnall

(Bagnall, 1927, Ann. Mag. Nat. Hist., ser. 9, XIX, p. 566; idem, 1929, Ent. Mo. Mag., LXV, p. 180; Priesner, 1932, Bull. Soc. Roy. Ent. d'Egypte, p. 46; Bagnall and John, Ann. Soc. Ent. France, 1935, p. 313).

Male (undescribed): Head and abdomen darker than the rest of the body, as in the female. Thorax slightly tinged with orange. Body very slender. Antennae as in female, production of antennal 2 sharply pointed, with apical setula, interior margin of joint rounded, exterior margin straight. Joint 4 with forked sense-cone. Head not produced in front of eyes, two pairs of ante-ocellar setae present; inter-ocellar bristles at sides of anterior ocellus, but very close to interior margin of eye. Transversal striation of pronotum not very close. Postero-angular bristles, length 28-32  $\mu$ , four pairs of postero-marginals present. Hind margins of abdominal sternites with comb of *sharply pointed* teeth, sternites III to VII each with a nearly circular glandular area. Wings rather pale, always fully developed.

Measurements (of allotype): Antennal joints, lengths (breadths), 14(25), 25(apic. 25), 24(20), 28(19), 22(16), 32(14), 8(6), 11(4)  $\mu$ . Head length (from posterior margin to apex of eyes), 74; eyes length 54, breadth of head, 92  $\mu$ . Pronotum length (width), 125(152)  $\mu$ . Pterothorax width, 172. Wings length, 520  $\mu$ . Hind tibiae length, 88  $\mu$ . Diameter of glandular areas (on IV to VI) about 28  $\mu$ . — Total body length (normal distension): 0.865 mm.

New records: Cyprus (Asomatos, x, 1935, in turf, leg. Mavroustakis); Palestine (Jordan Valley, Majami Bridge, 30.viii.35, leg. Rabinovitch; Egypt (Mead, Cairo, Giza, iii, vi, ix to xi, on *Andropogon halepensis*, *Zea mays* and other Gramineae, leg. H. Priesner; Arabia, Yemen, 1936, leg. Farag.

Distribution: France, Italy, Cyprus, Palestine, Egypt, Yemen.

### 3. *Chirothrips aculeatus* Bagnall

(Bagnall, 1927, Ann. Mag. Nat. Hist., ser. 9, XIX, p. 567; *idem*, *ibidem*, XX, p. 564; *idem*, 1932, Ent. Mo. Mag., XLVIII, p. 186-187; Bagnall and John, 1935, Ann. Soc. Ent. France, p. 314). — Nec *Ch. aculeatus* Priesner (1928, Thys. Eur., p. 708; *idem*, 1928, Ann. Mus. Nat. Hung., XXV, p. 62).

This species has never been fully described. From the measurements given by Bagnall (*l.c.*, 1932), I am certain that I have never seen any specimen agreeing with it; it is not represented in my collection, and all records given by Bagnall and myself on Central European specimens refer to *angusticornis* Bagnall. It is one of the largest forms and most closely allied to the following species, if it is not identical with it, probably representing giant specimens.

At least part of the specimens of American origin belong to the following species, as, e.g., a specimen (in my collection) from California which I received through the courtesy of Dudley Moulton.

### 4. *Chirothrips angusticornis* Bagnall

(Bagnall, 1932, Ent. Mo. Mag., XLVIII, p. 186).

Synonym: *Ch. similis* Priesner (nec Bagnall), 1926, Thys. Eur., pp. 142-144; *Ch. aculeatus* Priesner (nec Bagnall), *l.c.* p. 708.

Female: A comparatively large species, with forked sense-cone on joint 4, concave exterior margin of joint 2 the apex of which being somewhat rounded; a distinct production of the head in front of eyes which is somewhat rounded, not angular, and with long and slender tenth abdominal segment. The extreme apex of joint 2 bears no seta, but there is one present before apex, within the concavity. Two small ante-ocular setae, on a level with the fore margin of the eyes, are widely separated. The pronotum shows on its surface a transversal striation consisting of rather closely approaching lines which are more regular than in the species about *manicatus*. Micropores on tergite VIII are situated normally, viz., in front of bristles 1, and not between bristles 1 and 2.

Male: Quite different from female, much elongate, practically apterous. Joint 1 of antennae with sides almost straight, widened towards apex, 2 not produced exteriorly, somewhat asymmetrical, with interior margin slightly convex, exterior margin straight in basal two-thirds, then rounded, exterior seta before apex. Sense-cones simple, stout. Head production in front of eyes short, 6-7  $\mu$ , somewhat rounded, not acute. Ocelli wanting. Inter-ocular setae close to inner margin of eyes; ante-oculars (two pairs) in a straight transversal line. Transversal striation of pronotum fine and dense, four pairs of setae at hind margin, within postero-angulars. Pterothorax and tergites with fine transversal lines. Fore femora very slightly

sculptured, nearly smooth, apical margin scarcely elevated and thus without tooth. Protruding portions between the three-fold emargination of tergite IX, rounded, not dentiform. Sternites III to VIII with very large, slightly oval, glandular areas.

Measurements in  $\mu$ : Lengths (breadths) of antennal joints, 17-20(28), 28(25), 31(22), 29(22), 22(19), 29-32(17), 8(6), 11(4). Length of eyes, 48-52. of cheeks 24-28; breadth of head (across eyes) 96-104. Pronotum length 160-165, width at base, 160-184, at fore margin 116; postero-angular bristles 28-36. Pterothorax width 192-212. Length of hind tibiae, 108. Lengths (breadths) of glandular areas: 40(48), 40(54-60), 60(60), 40(56), 32(44-48).—Total body length: 0.97(contractd) to 1.1(distended) mm.

Descriptions based upon specimens collected by F. v. Pillich in Hungary (v-vii, on *Bromus tectorum* and other Gramineae). Compared with paratype from Bagnall's collection.

Distribution: Europe, North America.

#### 5. *Chirothrips pedestris* (Karny)

(1910, *Pezothrips pedestris* Karny, Mitt. Nat. Ver. Univ. Wien, VIII, p. 55, Taf. V, fig. 20).

Male (holotype): Brown, prothorax and anterior abdominal segments somewhat lighter brown; antennae dark, joints 2 and 3 little paler; tarsi greyish yellow. — Head little produced in front of eyes, length of production 4-6  $\mu$ , being rounded, not angular, about as in *angusticornis*; length of eyes about 35, of cheeks 20-25  $\mu$ ; length of head (from lateral production in front of eyes to base) 72  $\mu$ . Measurements of antennal joints, 16(24), 25(?21), 28, 28-30, 20-22, 31-32, 7, 8-9  $\mu$ ; joint 2 somewhat asymmetrical, not angularly produced, joint 4 with a simple sense-cone. Prothorax (length 145  $\mu$ ) dorsally with numerous fine transversal striae, about as in *molestus*, postero-angular bristles 25-28  $\mu$ ; hind margin with 3-4 pairs of minute setae within postero-angulans. Fore femora at exterior margin less convex than usual, nearly smooth, scarcely sculptured, hardly elevated distally, and, therefore, without conspicuous tooth; length of fore femora 72-74, breadth 46-47  $\mu$ . Length of hind tibiae 96  $\mu$ . Pterothorax length (medianly) about 152, breadth (slightly pressed) 172  $\mu$ . Wing pads wanting. Mesosternum smooth, without scallops and with setae very sparingly set. Abdominal tergites with very fine transversal lines, tergite II with 15-20 of them; sternites III to V each with a small, circular glandular area, that on V dot-like; their long diameters 26, 20 and 10  $\mu$ , respectively; pores on tergite VIII in front of median dorsal bristles; tergite IX with three emarginations forming two blunt dentiform projections at hind margin, about as in *angusticornis*, and chaetotaxy of this segment also about as in this species.

Similar to *angusticornis*, but specifically differing by the small size and number of the glandular areas. — Female unknown.

In 1919, when I saw this species the first time in Karny's collection, I thought it identical with *manicatus*.

Habitat: Lower Austria (Neustift), VIII, 1909, from grasses (ex coll. Karny).

#### 6. *Chirothrips* spec.

Female: Antennae dark, joint 3 paler, yellowish grey. Body brown. Wings pale yellow-grey. Anterior half of fore tibiae and the fore tarsi pale yellow. Antennae slenderer than in *manicatus*, sides of joint 1 little convex, joint 2 almost straight exteriorly, pointed at apex, with a seta before it; interior margin convex. Production of head, length 7-10  $\mu$ ; two pairs of dorsal ante-ocular setae; interocellars either at sides of front ocellus or at the tangent of the equilateral ocellar triangle. Joint 3 with simple, 4 with forked sense-cone. Prothorax 1.3 times as broad as long, the small discal setae somewhat irregularly arranged in four longitudinal double-rows, the median rows containing about 11 setae each; postero-angular bristles long (50-60  $\mu$ ), six pairs of postero-marginals within. Median bristles of metascutum behind fore margin. Fore wings on upper vein with 1+3+3 basal and 1+1+1 (or 1+1) distal bristles, lower vein with 5 bristles. Posterior margin of tergites with conspicuous comb. Segment X long and pointed, length 120  $\mu$ , split above nearly up to its base.

Measurements in  $\mu$ : Antennae lengths (breadths): ab.20(32), 34-35 (38-39), 36(25), 31-32(22), 39-41(18). 10(6-7), 13(4). Sense-cone on joint 3, 20. Head width across production 78, across cheeks 116-118. Length of cheeks 26-30. Inner margin of hind ocelli 26-27 distant. Pronotum length 212, width at fore margin 138, at hind margin 277. Interior postero-angular bristles, 50-54, exteriors 60. Distance of median bristles on mesoscutum 68, on metascutum 40. Length of wings 0.9-1. mm. Hind tibiae length 176-180. Bristles on segment IX, 1,2: 96-105, b.3; 128; on segment X, 120-128.

Habitat: 1 female, Reinach, Switzerland, 19.vi.1936, on *Euphorbia cyparissias* (accidental), leg Boder (No. 208/25), ex coll. Handschin.

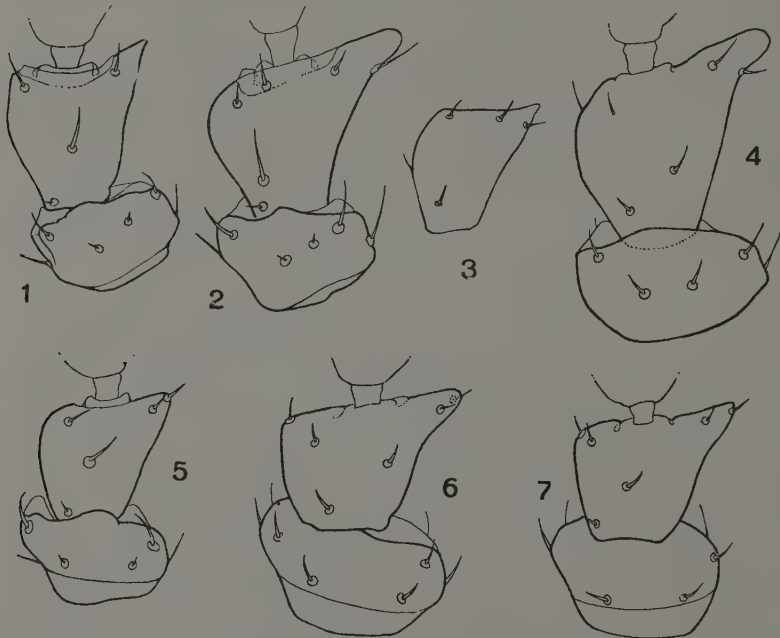
This form does not agree with any of the hitherto known species. It comes near to *aculeatus* and *angusticornis*. In the form of antennal joint 2 it resembles *meridionalis*, but its chaetotaxy is different, and the latter species is a smaller insect, without cephalic production, etc. I have refrained from naming this species, because it may turn out to be the female of Karny's *pedestris*. This being just a conjecture, we have to wait for further material, containing both sexes.



### 7. *Chirothrips cypriotes* Hood

(Hood, 1938, Ent. Mo. Mag., 74, p. 57, fig. 1)

The detailed description given by Hood needs no comment. The species is common in Cyprus (Cherkes, Asomatos, viii, x, leg. Mavromoustakis). The male is brachypterous.



Figs. 1-7: Basal antennal segments of females of various species of *Chirothrips*: (1) *Ch. meridionalis* Bagn., (2) *Ch. angusticornis* Bagn., (3) *Ch. spec. no. 6*, (4) *Ch. molestus* Pries., (5) *Ch. africanus* Pries., (6) *Ch. manicatus* Hal., (7) *Ch. ambulans* Bagn. [B. Assaad del.].

### 8. *Chirothrips molestus* Pries.

(Priesner, 1926, Thys. Eur., p. 142; Morrison, 1928, Ent. Mo. Mag., LXIV, p. 192).

Synonym: *Ch. similis* Priesner (nec Bagnall), 1928, l.c.p. 708. — Nec *molestus* Hood (1938, Ent. Mo. Mag., LXXIV, p. 161, fig. 2a).

Characterized by its large size, the form of antennal joint 2 which is strongly convex at interior margin, much produced at exterior margin, but its apex somewhat bent from insertion of external seta which is situated at exterior margin, somewhat before apex; extreme apex without setae. Head production long, 12-15  $\mu$ , three to four pairs of ante-ocular setae

present. Mesosternum without scallops. *Posterior margins of sternites (at least II to VI) with a dense row of small pores instead of tubercles or scallops.* Micro-pore on tergite VIII between bristle 1 and 2 and not in front of bristle 1.

The male has only *three* glandular areas (on sternites III to V), its antennal joint 2 produced, though less than in female, with sub-apical seta. Fore femora rugose exteriorly, with conspicuous small tooth at apex without. Transversal striae on pronotum close, regular. The production of joint 2 and of head, and the much coarser sculpture of the fore femora distinguish it readily from the male of *pedestris* with which it agrees in the number and form of the glandular areas.

Distribution : Austria.

### 9. *Chirothrips bagnalli* Hood

(Hood, 1938, Ent. Mo. Mag., LXXIV, p. 162, fig. 2b).

Synonym : *Ch. similis* var. *productus* Bagnall 1932, Ent. Mo. Mag., LXVIII, p. 184; *idem* and John (1935, Ann. Soc. Ent. France; CIV, p. 313).

Detailed description by Hood (l.c.).

Distribution : Spain, France.

### 10. *Chirothrips ruptipennis* Pries.

(Priesner, 1938, Konowia, XVII, 1, p. 25, fig. 1b).

Synonym : *Ch. molestus* Hood (nec Priesner), 1938, Ent. Mo. Mag., LXXIV, p. 161, fig. 2a.

This species is characterized by the moderately long abdominal segment X ( $96:68\ \mu$ ), the wholly dark antennae, the rather stout discal setulae on pronotum, being more numerous than in *manicatus*, the more numerous ante-ocellar setae, but particularly by the shape and chaetotaxy of joint 2 of the antennae. This is strongly produced, the production comparatively broad and evenly rounded at tip, bearing two setae and a ventral sub-apical one, *the dorsal seta being situated far distad*, near the exterior emargination. Joint 1 is much larger than in *manicatus*, larger than 2 ( $45:40\ \mu$ ), Postero-angular bristles of prothorax short and stout. Scallops at sides of mesosternum very conspicuous. — I have not yet seen specimens having intact wings.

Distribution : Austria, Switzerland (ex coll. Handschin), Spain.

### 11. *Chirothrips insularis* Hood

(Hood, 1938, Ent. Mo. Mag. LXXIV, p. 158, fig. 1).

Fully described by Hood. I have a male specimen of this insect from Cherkes, x, 1934, turf, leg. Mavromoustakis).

Distribution : Cyprus.

**12. *Chirothrips ammophilae* Bagnall**

(Bagnall, 1927, Ann. Mag. Nat. Hist., ser. 9, p. 564).

Close to *manicatus*, but antennae and sense-cones slenderer, head production much longer than in either *laingi* or *manicatus*, scallops at hind margin of abdominal sternites inconspicuous in the middle, whilst they are evenly developed all along the margin, in *manicatus*. Major body bristles, and abdominal segment X longer. — Male unknown.

Distribution: South France.

**13. *Chirothrips laingi* Bagnall**

(Bagnall, 1932, Ent. Mo. Mag., LXVIII, p. 185; Bagnall and John, 1935, Ann. Soc. Ent. France, CIV, p. 313).

Very similar to *manicatus*, but sense-cones on 3 and 4 slenderer, abdominal segment X decidedly slenderer, semicircular warts on posterior margins of sternites less conspicuous. I am in possession of a paratype specimen. — Male unknown.

Distribution: South France.

**14. *Chirothrips pallidicornis* Pries.**

(Priesner, 1925, Zool. Jahrb., 50, p. 312; idem, 1926, Thys. Eur., p. 139; idem, 1928, Ann. Mus. Nat. Hung., XXV, p. 62; idem, Konowia, XII, p. 300; idem (description), 1938, Konowia, XVII, p. 24, fig. 1c).

In size like a large *manicatus*. Scallops on fore angles of mesosternum visible. Segment X of abdomen short, very little slenderer than in *manicatus*, joint 2 of antennae with exterior margin straight, or nearly so, head production *extremely* short, but yet *angular*, circular tubercles on posterior margins of sternites less conspicuous or obliterated. — Male unknown.

This species is certainly not identical with *meridionalis* Bagn. (1929, Ent. Mo. Mag., LXV, p. 180).

Distribution: Germany, Hungary.

**15. *Chirothrips africanus* Pries.**

(Priesner, 1932, Bull. Roy. Soc. Ent. d'Egypte, p. 46).

From *manicatus* differing chiefly by the form of the second antennal joint which is not noticeably emarginated without. Antennal joint 7 is always somewhat longer than 8. End of abdomen short, as in *manicatus*. The head production is extremely short, and antennal 3 is not so dark. The male is brachypterous, as in *manicatus*, the glandular areas are somewhat smaller.

New records: Egypt (Helwan, Meadi, Giza, Cairo, Toukh, Faroukia; Oases of Siwa and Baharija; specimens from the latter locality collected by Moh. Hussein, all others by myself; Sinai, El-Ariesh, leg. Rabinovitch); Cyprus (Limassol, leg. Mavromoustakis).

*Chirothrips africanus* was found on the following plants: *Panicum turgidum*, *Eragrostis bipinnata*, *Imperata cylindrica*, *Cynodon dactylon*, *Cladium*

*mariscus* and *Cyperus* spp.; in one case, on millet cobs (*Sorghum vulgare* Pers.). It has not been observed as doing harm to cereal crops.

#### 16. *Chirothrips aethiops* Bagnall

(Bagnall, 1932, Ent. Mo. Mag., LXVIII, p. 184).

I saw the type in 1938, and made a rough sketch of the second antennal which is exactly alike that of *africanus*. It is an immature or faded example. I do not think *aethiops* to be anything else than a large specimen of *africanus*.

#### 17. *Chirothrips similis* Bagnall

(Bagnall, 1909, Journ. Econ. Biol., 4, pp. 34-35).

Bagnall's description of *Ch. similis* is not detailed enough to learn from it, as far as the types are concerned, whether *similis* is based upon large specimens of *manicatus* or another species (cf. Morison, 1928, Ent. Mo. Mag., LXIV, p. 192). This question can be solved only after examination of the type specimens (Gibbside, VIII, 1908, coll. Bagnall); further examples, collected and identified by Bagnall (e.g., Ainsdale, VII, 1924), and sent to Morison, represent, according to the latter author, large specimens of *manicatus*. Furthermore, some of Bagnall's *similis* (1927, Ann. Mag. Nat. Hist., ser. 9, XIX, p. 567) belong, as Hood (1938, Ent. Mo. Mag., LXXIV, p. 161) already stated, to *ruptipennis* Pr. (= *molestus* Hood) l.c., nec Priesner); but Bagnall's *similis* of 1927 do naturally not represent the types.

Bagnall's *similis* is in any case a mixture, thus the preservation of this name entirely depends on the type specimens, whether they are *manicatus* — perhaps identical with f. *longisetis* m. — or fully winged *ruptipennis*, or even something else.

*Ch. molestus* Pr. which Bagnall considers as a synonym of *similis*, is something quite different. This becomes obvious after perusal of Bagnall's comparison of *Chirothrips ammophilae* with *Ch. similis* (Ann. Mag. Nat. Hist., ser. 9, XX, pp. 564-565); Bagnall states (l.c.) that the head of *ammophilae* is more strongly produced than that of *similis*; a paratype specimen of *ammophilae* (ex coll. Bagnall) has length of head production 12-14  $\mu$ , whilst this part measures 14-16  $\mu$  in *molestus*, but 7-8  $\mu$  in *similis*. The antennae are much slenderer in *molestus* (17(36), 34 (apic. 48), 35(24), 36(25), 30(22), 42(18), 10-11(7-8), 11(4-5)  $\mu$ ), than in *similis* (from joint 3: 30(25.5), 34(27), 24(20), 39(19), 11, 9  $\mu$ ).

#### 18. *Chirothrips manicatus* Haliday

(Haliday, Ent. Mag., 1936, III, p. 444; further references in Priesner, 1926, Thys. Eur., p. 138; more detailed description in Morison, 1928, LXIV, p. 189).

This species has been, and will further be, confused with others. Morison has shown that it varies considerably. My material contains a par-

ticular form, being characterized by somewhat more elongate antennae, especially their stylus; at the same time, the postero-angular bristles of the prothorax are longer, 55-60  $\mu$ . Years ago, Titschack drew my attention to this form; it may be separated under the name *longisetis* nov., as it may represent a biological race. The original specimens are from the Boberg sand-dunes in Western Germany (V, 1934), others from Escheburg near Hamburg (X), all collected by Dr. E. Titschack.

*Ch. manicatus* f. *brachyptera*. (Maltbaek, Danmarks Fauna, 1932, p. 39; Morison, 1928, l.c. p. 190). This form must not be confused with *Ch. ambulans* Bagn. It is smaller, joint 2 somewhat more strongly pointed, 5 shorter. Prothorax much shorter, nearly 1.5 times as broad as long. Pterothorax less broad than in *ambulans*, about 1.4 times as broad as long. Wing rudiments much longer than in *ambulans*, about 120  $\mu$ , but are supposed to vary somewhat in length; they bear several costal bristles, the longest of which is well 40  $\mu$  in length. Head production about 6  $\mu$ ; two pairs of minute ante-ocellar setae, one pair of inter-ocellars, somewhat on a higher level than the very small front ocellus. Antennal joint 1 broader than in *manicatus* f. *macroptera*, joint 2 somewhat more sharply pointed, joint 5 somewhat broader than long. Prothorax as in the macropterous *manicatus*, but dorsum more sparingly set with minute discal setae. Bristles on prothorax much shorter than in the macropterous form, about as in *ambulans*. Pterothorax length (width), 180(228)  $\mu$ . Abdomen as in the macropterous form, but bristles on apex of abdomen shorter than in either this form or *ambulans*, their length about 70  $\mu$  on segment IX, 80-88  $\mu$  on X. — Danmark Fanoe, 11.vii.28, ex coll. Maltbaek).

*Ch. manicatus* is said to have world-wide distribution, but many records are unreliable, particularly those of South Africa, India, South America. This species is certainly distributed over Europe, Asia and North America. I have not seen Egyptian specimens. It occurs, however, in Cyprus (Asomatos, x, 1935, in turf, leg. Mavromoustakis).

#### 19. *Chirothrips ambulans* Bagnall

(Bagnall, 1932, Ent. Mo. Mag., LXVIII, p. 185; Synonym: *Ch. manicatus* f. *aptera* Schille, Akad. Wiss. Krakau, 1910 (Sep. p. 4)); Priesner, 1926, Thys. Eur., p. 139; Hukkinen, 1935, Ann. Ent. Fenn., 1, 3, p. 87, 90 (not certain, may be de-alated *manicatus*).

Female: Apparently apterous, but in fact with extremely minute wing pads which do not exceed a length of 45-50  $\mu$  and are narrow, bearing three minute setulae; these wing pads are not well discernible in the ordinary preparations, except by the use of an oil immersion, as they are much smaller than in *manicatus* f. *brachyptera* (112  $\mu$ ), where they are rounded apically and set with conspicuous costal setae. Body and antennae dark as in *manicatus*, Head very slightly produced in front of eyes, 4  $\mu$ , anterior ocellus



very small, punctiform, inter-ocellar setae situated about at its sides. *Antennal joint 1* distinctly thicker than in *manicatus*, 2 about intermediate in shape between that of *manicatus* and *ruptipennis*, the remaining joints about as in the former species. Prothorax appearing somewhat more elongate than in *manicatus*, sides straight. Postero-angular bristles 24-26  $\mu$ . *Pterothorax* 1.5-1.6 times as broad as long (260-277 : 173  $\mu$ ), much shorter than in *manicatus*. Scallop at sides of mesosternal plate fairly conspicuous. Abdomen broad and heavy, segment X short, pores of tergite VIII in front of dorsal setae (as in *manicatus*), but farther apart from each other than setae 1; rows of semicircular lobes of hind margins of sternites very little conspicuous (on segments IV-VI), whilst they are very conspicuous (from III to VI) in *manicatus*.

Measurements in  $\mu$ : Head length 100, width across production 72, across eyes or cheeks 108; antennae, lengths (breadths) of joints, 17?, 24(36), 28(23-24), 29(24), 28(20), 32-34(17), 11(6), 11(4); joint 2 at base 20 broad, at exterior (interior) margin 31(18-20) long. Prothorax length (width) 180(225-230). Abdomen length(width) 778(329), normally distended; segment X, length(width) 68-72(60). Bristles on IX, 72-84, on X, 85. Hind tibiae length 132.

Description based upon specimens collected by me in Austria (Linz, S.v.1922).

The palaearctic species of *Chirothrips* may be separated by means of the following keys:

#### 1. Females

- 1 (2) Antennal joint 2 simple. Apical angle of fore femora with stout, curved tooth ..... **hamatus Tryb.**
- 2 (1) Antennal joint 2 produced exteriorly.
- 3(36) Macropterous forms.
- 4(11) Larger sense-cone on antennal joint 4 *forked*. Segment X of Abdomen long.
- 5 (6) Head without production in front of eyes. Produced angle of antennal 2 sharply pointed, interior margin of it strongly convex. Abdominal sternites with a comb of long, pointed teeth at hind margin ..... **meridionalis Bagn.**
- 6 (5) Head in front of eyes, laterally, with at least a short production. Sternites usually more or less distinctly serrate at posterior margin.
- 7(10) Exterior margin of joint 2 concave, produced apex somewhat rounded.
- 8 (9) Prolongation of head 14  $\mu$ . Exterior length of antennal 2: 45  $\mu$ . Pronotum length(width) 230(270)  $\mu$ . Postero-angular bristles, 66-68  $\mu$ . ..... **aculeatus Bagn.**

- 9 (8) Cephalic prolongation 8-11  $\mu$ . Exterior length of antennal joint 2: 38-40  $\mu$ . Pronotum length(width) 195(255)  $\mu$ . Postero-angulars, 45-50  $\mu$ .  
..... **angusticornis** Bagn.
- 10 (7) Exterior margin of joint 2 almost straight, produced apex pointed ...  
..... **spec. (No. 6)**
- 11 (4) Antennal 4 with simple sense-cones.
- 12(13) Head without prolongation in front of eyes, the latter directly joining fore margin. Joint 2 sharply pointed, interior margin strongly convex. Abdominal segment X short. General coloration pale orange. Inter-ocellar bristles at the tangent of the ocellar triangle .....  
..... **cypriotes** Hood
- 13(12) Head at least slightly produced beyond eyes; even in cases where production is scarcely visible, there is an angle between eyes and fore margin of head. General coloration not pale orange, much darker
- 14(15) Median setula on joint 2 situated laterally and beyond middle, produced part of joint rounded at apex, with two apical setulae. Joint 1 broader than 2. Vertex with four to five pairs of irregularly placed ante-ocellar setae, three to four on dorsum, one at anterior angles. Specimens usually partly de-alated (pseudo-brachypterous) .....  
..... **ruptipennis** Pr. (**molestus** Hood)
- 15(14) Median seta of joint 2 in normal(dorsal) position, *not* beyond middle, often near base.
- 16(17) Antennal joint 4 broader than long. Prothoracic bristles short, 16-20  $\mu$ .  
..... **insularis** Hood
- 17(16) Antennal 4 not broader than long.
- 18(33) Prolongation of antennal joint 2 with one or two exactly terminal setae.
- 19(26) Antennal joint 2 with strongly, or at least slightly, concave exterior-margin; setae always situated apically, not in the emarginated part (i.e., preapically).
- 20(23) Abdominal segment X short, length 80  $\mu$  at the most, and scarcely 1.2 times as long as broad at base. Antennae dark.
- 21(22) Length of postero-angular bristles of prothorax 32-45  $\mu$ . Antennal 8 length, 7-11  $\mu$  ..... **manicatus** Hal.
- 22(21) Length of postero-angular bristles of prothorax 55-60  $\mu$  .....  
..... **manicatus longisetis** nov.
- 23(20) Abdominal segment X longer, at least 90  $\mu$ . and at least 1.4 times as long as broad at base.
- 24(25) Head production 7-9  $\mu$ . Postero-angular prothoracic bristles 28-45  $\mu$ .  
..... **laingi** Bagn.
- 25(24) Head production 15  $\mu$ . Postero-angular bristles 52-56  $\mu$ . Antennal joint 5 more elongate ..... **ammophilae** Bagn.
- 26(19) Exterior margin of antennal joint 2 straight.

- 27(32) Head production very short, at most 4  $\mu$ .
- 28(31) Abdominal segment X short. Antennae dark, joint 7 usually longer than 8. Prothoracic bristles shorter, at most 42  $\mu$ .
- 29(30) Larger, width of pterothorax about 315  $\mu$ . ..... **aethiops** Bagn.
- 30(29) Smaller, width of pterothorax 234-285  $\mu$ . ..... **africanus** Pr.
- 31(28) Abdominal segment X somewhat longer. Antennal 2 yellow at apex 3 wholly yellow; joint 5 more elongate. Head production and prothoracic bristles longer, interiors 50  $\mu$ . ..... **pallidicornis** Pr.
- 32(27) Prolongation in front of eyes longer, about 15  $\mu$ . ..... **cf. ammophilae** Bagn.
- 33(18) Prolongation of joint 2 with subapical seta on exterior margin.
- 34(35) Antennal 2 with strongly convex interior margin, tip of prolongation long and pointed. Joint 1 narrower than 2. Head production longer, 12-15  $\mu$ . Inter-ocular setae on a level behind anterior ocellus, never in front of it. Four pairs of ante-ocular setae. Posterior margins of abdominal sternites with a dense row of small pores. Micro-pores on tergite VIII between bristle 1 and 2. .... **molestus** Pr.
- 35(34) Antennal 2 only slightly convex at interior margin, apex more triangular. Joint 1 broader than 2. Head production shorter, 11  $\mu$ . Abdominal segment X short, 85  $\mu$ . Inter-ocular setae, as usual, on a level before front ocellus ..... **bagnalli** Hood (= **similis** var. **productus** Bagn.)
- 36 (3) Brachypterous forms. Sense-cones always simple.
- 37(38) Median seta on joint 2 beyond middle, nearer to exterior margin. Three to four dorsal pairs of anterior ante-ocular setae. (Usually pseudo-brachypterous) ..... **cf. ruptipennis** Pr.
- 38(37) Median seta on joint 2 situated before middle of joint, dorsally. Two dorsal pairs of anterior ante-ocular setae. Apex of joint 2 less rounded. Brachypterous or apparently apterous.
- 39(40) Pterothorax broader, about 1.5 times as broad as long. Wing rudiments very minute, length 45-50  $\mu$ , at the most. Prothorax at most 1.1 times as broad as long ..... **ambulans** Bagn.
- 40(39) Pterothorax less broad, 1.4 times as broad as long. Wing pads conspicuous, about 120  $\mu$ , exterior margin with (35-40  $\mu$ ) curved costal bristles. Prothorax nearly 1.5 times as broad as long. .... **manicatus** f. **brachyptera** Mor.

## 2. Males

- 1 (6) Antennal joint 2 simple.
- 2 (5) Sternites III to VIII with with large, oval or transversely elongate, glandular areas.

- 3 (4) Fore femora with a curved, pointed tooth at apex. Glandular areas transversely elongate. Antennal joints 5-8 much elongate ..... **hamatus Tryb.**
- 4 (3) Fore femora without conspicuous tooth at apex, exteriorly. Glandular areas nearly circular. Joint 2 of antennae slightly asymmetrical, joints 4 and 5 little elongate ..... **angusticornis Bagn.**
- 5 (2) Sternites III to V only with small circular areas, that on V punctiform ..... **pedestris (Karny)**
- 6 (1) Antennal joint 2 produced exteriorly, about triangular.
- 7 (8) Sense-cones on joint 4 forked. Head not produced in front of eyes. Glandular areas moderately large, on sternites II to VI. Macropterous ..... **meridionalis Bagn.**
- 8 (7) Sense-cone on joint 4 simple. Brachypterous or apterous.
- 9(10) Head not produced in front of eyes. Pale yellow species, with prolongation of joint 2 long and sharp ..... **cypriotes Hood**
- 10 (9) Head at least slightly produced.
- 11(12) Glandular areas developed on segments III to VIII, large, almost circular. Head production somewhat rounded, not angular. Joint 2 scarcely produced, but asymmetrical ..... **cf. angusticornis Bgn.**
- 12(11) Sternites III to V, or sternites III to VII, with glandular areas.
- 13(18) Sternites III to V with circular areas.
- 14(17) Transversal striation on pronotum very close, regular.
- 15(16) Head production longer. Fore femora with transversal structure, apex with small tooth exteriorly. Antennal 2 triangularly produced. Larger species, length of pronotum 190-196  $\mu$  ..... **molestus Pf.**
- 16(15) Head production shorter, rounded, as in *angusticornis*. Fore femora smooth, without apical tooth. Antennal 2 not produced, somewhat asymmetrical. Smaller species (length of pronotum 145  $\mu$ ). ..... **cf. pedestris (Ka.)**
- 17(14) Transversal striation on pronotum as in *manicatus*, more irregular and more widely spaced than in *molestus* or *pedestris*. Smaller species. Antennal joint 4 broader than long, 2 with seta at apex. Colour yellowish ..... **insularis Hood**
- 18(13) Sternites III to VII with more oval glandular areas. Antennal 2 with seta at apex. Transversal striation on pronotum normal, somewhat irregular, striae not very close together.
- 19(20) Head production about 12  $\mu$ . Antennal 7 usually not longer than 8. Glandular areas somewhat larger. .... **manicatus Hal.**
- 20(19) Head production about 8  $\mu$ . Antennal 7 a little longer than 8. Glandular areas very small ..... **africanus Pr.**

RESULTS OF THE ARMSTRONG COLLEGE EXPEDITION  
TO SIWA OASIS (LIBYAN DESERT), 1935,  
UNDER THE LEADERSHIP OF PROF. J. OMER-COOPER

## Diptera Empididæ, Dolichopodidæ, Aschiza and Acalypteræ

(with 13 Text-Figures)

by J.E. COLLIN, F.R.E.S.  
(Newmarket, England)

This paper gives an account of a large number of the smaller Diptera, chiefly Acalypteræ, collected by Professor J. Omer-Cooper during the Armstrong College Expedition to Siwa Oasis. As these groups have been but little studied in the Egyptian fauna I have added notes on a collection made during the recent war by Mr. R.L. Coe, of the British Museum (Natural History), and also on a few specimens lent to me for study by Professor H.C. Efflatoun Bey, to whom I express my thanks.

All specimens are deposited in the British Museum (Natural History), unless it is otherwise stated.

### EMPIDIDÆ

*Crossopalpus aenescens* W. — Siwa, ix-viii (9 ♂♂, 11 ♀♀).

This species is a common one throughout the Mediterranean region Africa, and Asia.

*Drapetis laevis* Beck.

Captured in numbers at Lake Karoun in August (Coe), and 5 ♂♂, 4 ♀♀ in the Siwa area from May to August (Arm. Coll. Exp.).

*Drapetis bicolor* sp.n., ♀.

A small species with black head and thorax; but yellow abdomen and legs, much like *laevis* Beck. except in wing venation and colour of abdomen.

♀. Ocellar bristles very small, scarcely longer than occipital pubescence, upper pair outcurved, lower pair incurved; a pair of much longer vertical



bristles placed wide apart; all pubescence and bristles pale. Antennae with basal joints somewhat yellowish, third joint small, not deeper than second, and very little longer than deep; bristles beneath second joint short, not exceeding length of this joint. Palpi translucently yellowish, but with a silvery sheen from microscopic pile, and with silvery bristles.

Thorax shining black, the disc universally clothed with short pale hairs, without intermixed longer dorso-central bristles except for a pair behind (one immediately in front of each corner of scutellum). Pubescence on prescutellar area not longer than elsewhere. Scutellum slightly dusted greyish, with four pale marginal bristles, apical pair longer. Prothorax (including episterna) dusted greyish, the latter with a vertical row of soft pale hairs, and the dusting continued for only a short distance along upper margin of mesopleura.

Abdomen yellow, only slightly chitinized, with the first three tergites and the abbreviated sixth sometimes slightly brownish. Pubescence very short and pale, longer on the sixth segment and terminal papillae.

Legs entirely yellow without distinctive bristles, and the very short pubescence pale. Basal joint of hind tarsi about as long as other four joints together.

Wings almost hyaline with yellowish veins. Crossveins scarcely one and a half times length of outer one apart, and this distance less than one-third length of last section of postical vein. Cubital vein with a very distinct bend (convex above) just before tip; discal vein diverging from cubital until opposite end of subcostal, and then straight except for two very slight undulations, the first upwards, then downwards. Halteres yellow.

Length about 1 mm.

Described from four females taken by Mr. F.C. Willcocks on the laboratory window at Ghezireh (Cairo) on December 7th, 1910.

The allied Egyptian species *D. laevis* Beck. in addition to having a darker abdomen, has still shorter hairs on thorax, and very different venation with cubital and discal veins much straighter, distance crossveins are apart quite twice length of outer one, and more than half length of last section of postical vein, with the combined second basal+discal cell much longer than this last section.

#### ***Tachydromia pachycera* sp.n., ♂ ♀.**

Resembling *anomalicerca* Beck. in having a narrow third antennal joint and thickened arista, but with two pairs of vertical bristles, and much longer thoracic bristles and hairs.

♂. Frons narrowing towards front where it is narrower than basal antennal joint. Face still narrower. Palpi small and narrow, greyish-yellow.

Occiput entirely dusted and bearing long pale hairs. Vertical and ocellar bristles pale. Basal antennal joints yellow, the black third joint quite three times as long as deep at base, and with a dark dilated (flattened) arista about two-thirds its length.

Thorax black not very densely dusted greyish except on front part of sternopleura. Bristles and hairs all exceptionally long and pale. At least four pairs of long dorsocentrals with other rather long hairs in each row, the biserial acrostichals also rather long. A long humeral, and a single long notopleural with other shorter hairs. A pair of very long apical and shorter lateral scutellar bristles.

Abdomen black, but not very brightly shining; pubescence long and pale especially long at sides of all tergites and on hindmargin of prehypopygial tergite. No conspicuous side dust patches. The neat, compact, hypopygium without any projections. Left lamella (dorsal owing to twist) with broadly and evenly rounded end, and a neat pale fringe on left margin. The strap-shaped and more dusted anal papillae (left one shorter than right) neatly sunk level with hypopygial shell.

Legs entirely yellow except for brownish annulations at end of each tarsal joint, narrower and less conspicuous at end of each first joint. Pubescence obvious and pale. Middle femora with a row of long pale bristles behind the ventral double row of short black spines. Middle tibiae with a pointed, hairy, spur at tip beneath.

Wings yellowish hyaline. Last section of discal vein very little bowed and practically parallel with cubital towards its end. Second basal cell extending for half length of middle crossvein beyond end of first basal cell, and its lower outer angle somewhat acute. Vein closing anal cell almost straight and about at right angles to postical vein. Halteres yellow.

♀. Similar to male but all pubescence somewhat shorter. Seventh and eighth abdominal tergites, and narrow terminal cerci, dusted greyish.

Length about 2 mm.

Described from three males and two females taken by evening sweeping at Siwa on April 24th 1935 (Arm. Coll. Exp.).

#### ***Tachydromia cognata* sp.n., ♂.**

A species with only one pair of vertical bristles, basal antennal joints yellow, third joint short, thorax dusted and with stronger bristles dark, spur to middle tibia blunt, and posterior coxae and trochanters dark.

♂. Frons and vertex dull, dusted greyish like the thorax, face a lighter more yellowish-grey. Frons about  $2\frac{1}{2}$  times wider at vertex than at narrowed part above antennae; face about width of front of frons, and slightly widening out below. One pair of vertical bristles twice as wide apart as width of frons

opposite front ocellus, these and ocellar bristles dark, the other shorter pubescence on upper part of occiput, and longer on lower part, almost golden in colour. Basal joints of antennae obviously yellow, third joint (about half as long again as deep) and black; arista also dark and longer than the three antennae joints together. Palpi rather small, ovate, yellow, clothed with golden dust, and with one distinct bristle at tip and other shorter hairs.

Thorax dull from dusting of almost olive-grey dust; sternopleura with a large shining black patch, but not including its hindmargin. Acrostichals biserial, pale, and finer than the majority of dorsocentrals, the latter with a few slightly longer and darker hairs intermixed in front, and ending behind in two pairs of strong, dark, bristles. Other bristles include a curved brownish humeral, one strong dark and other yellowish notopleural, one dark postalar, and a pair of dark scutellar bristles with a fine pale hair near each.

Abdomen shining black, the base of first two tergites dusted on a transverse patch, widest at sides, but other tergites only dusted on extreme basal margin. Pubescence pale. Right lamella of hypopygium appears to end in a long point slightly curved at tip, which lies in its natural position next to the fringed side of left lamella; anal papillae almost equal in length, but left one wider, and more shining black, at least on end half. Venter shining black.

Legs yellow, the four posterior coxae, and trochanters, and extreme apical ridge of femora, darkened; knee of middle tibiae also darkened; tarsi with tip of first joint narrowly, of second and third joints more extensively, darkened, while fourth and fifth joints may be entirely dark. Front femora moderately stout, no small bristles above front or hind tibiae, middle femora as usual with a posteroventral row of yellow bristles, as well as the double row of black points beneath. Hind femora slender and quite short haired. Spur to middle tibiae blunt with a few hairs in a row and a small bristle at tip.

Wings clear, all veins equally dark, costa considerably dilated for a short distance beyond end of subcostal vein, but not darkened stigma-like. Cubital and discal veins very little convergent towards tip, second basal cell longer than first by about length of discal (middle) crossvein. A distinct black bristle at base of costa. Halteres very pale yellow.

Length about 2 mm.

Described from three males taken at Mariout by Prof. H.C. Efflatoun in 1922 on January 20th (the type) and 21st and March 16th. The first two are now in the Faculty of Science (Fouad 1st University), at Cairo, the third in the author's Collection.

The European *T. stigma* Coll., *annulipes* Mg., and *subtilis* Coll. which possess some of the characters of *cognata* are all easily distinguished by having longer, narrower third antennal joint, and very pale bristles on thorax.

besides other differences. *T. cognata* is also distinct from any species described by Becker from Egypt or North Africa.

***Tachydromia sejuncta* sp.n., ♂ ♀.**

A species with only one pair of vertical bristles, black antennae with third joint about as long as arista (fig. 1), thorax dusted and with pale bristles, and distinct humeral bristle, legs yellow with sharp-pointed spur to middle tibiae, and annulated tarsi.

♂. Frons and face both wide, quite as wide as third antennal joint is deep; vertical bristles wide apart, twice width of frons at front ocellus. Palpi dusky but clothed with silvery pile and with pale bristle at tip. All bristles on head and thorax pale.

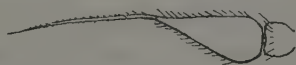


Fig. 1 : *Tachydromia sejuncta* spec. nov., antenna of male.

Thorax dull dusted greyish with two indistinct, slightly less dusted, and consequently somewhat darker, stripes between acrostichal and dorsocentral rows of bristles. Acrostichals biserial, not very numerous, continued to scutellum though widening out behind. Dorsocentrals including 6-7 rather longer ones in each row. Two bristles and other hairs in notopleural area. Sternopleura with a comparatively small bare patch.

Abdomen shining black but whole of sidemargins and narrowly across hindmargins dusted greyish; hindmargin of first tergite conspicuously grey. Venter densely dusted greyish. Hypopygium large, mainly shining black, anal papillae (on right) large and stout, almost equally long.

Legs yellow with plainly black annulated tarsi; coxae a little dusted greyish, the four posterior ones black at base, brownish towards tip, front pair slightly darkened about base. Spur to middle tibiae strong and sharp-pointed. A posteroventral row of long yellow bristles on middle femora. Tarsi long, hind tarsi with basal joint about as long as next three together.

Wings with distinctly darkened veins, especially the postical. Outer cross-vein well beyond middle one and sloping outwards. Cubital and discal veins only a little wider apart at middle of last section than at end, and slightly diverging at extreme tip. Crossvein closing anal cell practically at right angles to postical vein, and penultimate section of postical vein rather longer than last section.

♀. Resembling the male. Sixth tergite not entirely dusted, but similar though smaller than fifth. Cerci projecting from between the two shining black, blunt, hind corners of eighth sternite.

Length about 3 mm.

Described from a pair taken by Prof. H.C. Efflatoun at Mariout, the female on January 21st 1922 and the male on February 14th 1923. These specimens will be returned to the Collector.

This species is allied to *T. praecincta* Coll., but has a wider frons, and different venation. *T. approximata* Beck. is smaller with shorter dorsocentral and acrostichals on thorax, no dusted grey bands on abdomen, and a shining venter. *T. turgida* Beck. also has dorsocentrals shorter, and acrostichals very short and fine, almost uniserial, with alternate hairs diverging; abdomen of male dusted only at sides of first and penultimate tergites, and on basal margin of last tergite; and front tibiae conspicuously stout.

#### Genus *Schistostoma* Becker

The genus *Schistostoma* was described by Becker in 1902 with type *S. eremita* Beck. from Egypt. Subsequently in 1907 he added two new species *S. alterum* and *nigrescens* from Tunisia. In 1909 he discovered that his *S. alterum* belonged to a distinct genus and from an examination of types sank it as a synonym of *Parathalassius blasigi* Mik, at the same time adding *Microphorus truncatus* Lw. to his genus *Schistostoma*. This latter genus is obviously very closely related to *Microphorus*, the venation is the same, and male genitalia of similar type, but clypeus is narrower, chaetotaxy of thorax less developed, and scutellar bristles reduced to two. In describing the genus Becker wrote "Augen ..... in beiden Geschlechtern breit getrennt", but I have seen one of Becker's original male specimens and this has the eyes touching for a long distance on frons as in *Microphorus*, as is the case also in the males of the species described below. That Becker's description was incorrect may be accepted as certain because in 1909, without comment, he placed *Schistostoma* in a section having "Augen der ♂ auf der Stirn zusammenstossend." *S. eremita* Beck. is quite distinct in having extensively yellow legs, only coxae, base of femora and last joint of tarsi being darkened. The palpi are also yellowish.

#### *Schistostoma nigrescens* Beck.

Originally described from the female only by Becker from Tunis, but Prof. Efflatoun sent me a pair taken at Mariout, the male on February 23rd 1922 and the female on March 16th 1923, which I believe represent Becker's species. This male is compared below with the male of a new species described in greater detail as *S. discretum*.

♂. Third antennal joint shorter and more pear-shaped; lower part of occiput with more numerous, woolly, pale hairs. Thorax more plainly striped, the two narrow stripes (between acrostichals and dorsocentrals) more evident from every point of view. Abdomen more densely, and longer, haired at



the sides. Hypopygium (fig. 2) with longer anal papillae (or cerci), and decidedly longer and stronger black processes projecting forwards on the right beneath. Legs with the white hairs and bristles rather longer and more evident. Wings conspicuously milk-white except perhaps towards costa, and veins dark brown and very distinct, space between mediastinal vein and subcostal yellowish, but a distinct brown oval "stigma" at end of latter vein.

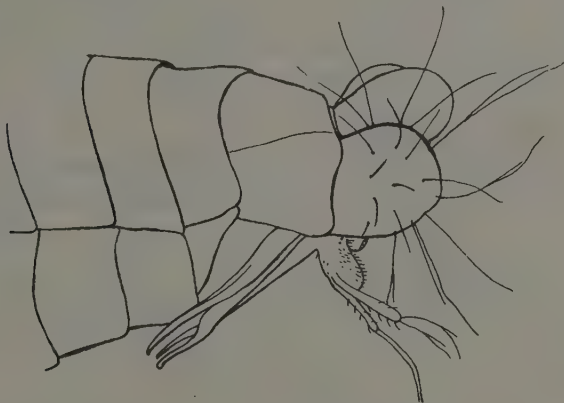


Fig. 2 : *Schistostoma nigrescens* Beck., hypopygium.

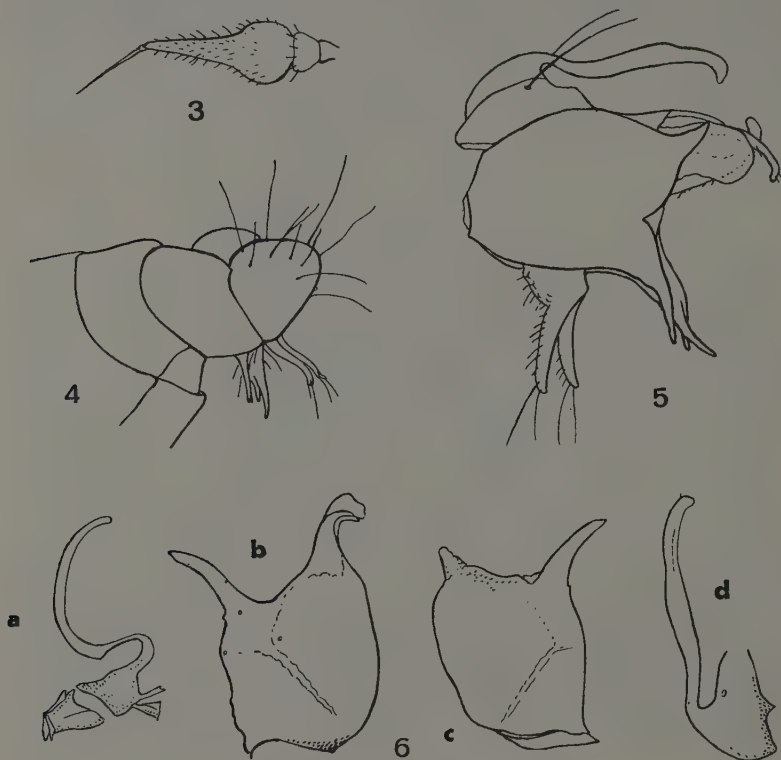
Loew's description of the wings and thorax of his *Microphorus truncatus* (female only) indicate a possibility of *nigrescens* Beck. being only a synonym of that species, but Becker who recorded in 1909 that he had examined Loew's type, neither admitted the synonymy, nor stated how the species differed.

#### ***Schistostoma discretum* sp.n., ♂ ♀**

A species resembling *S. nigrescens* Beck., but third antennal joint longer, and thorax not striped.

♂. Ocellar triangle grey and prominent; eyes bare, touching for a long distance on frons, upper facets more dilated than lower. Face short, mouth-opening narrow, extending upwards and leaving a considerable width between mouthopening and eye. Occiput dull grey, bare on upper half except for a postocular ciliation of short pale hairs. Antennae (fig. 3) with first two joints short, second with only *very* short pale hairs, third clothed with minute whitish pubescence, elongate, and as in most species of *Microphorus*

deep on basal quarter then rapidly becoming more slender and tapering to a point, the style  $1/2-2/3$  length of third joint. Palpi small, almost hidden, dark with short whitish hairs at tip. Proboscis usually hidden except for end of the labellae.



*Schistostoma discretum* spec. nov., male:

Fig. 3 : Antenna. — Fig. 4 : End of abdomen from left. — Fig. 5 : Macerated hypopygium from right. — Fig. 6 : Dissected hypopygium showing (a) penis, (b) left lamella, (c) right lamella, and (d) ventral lamella.

Thorax grey with a faint brownish tinge on disc in some lights, and hardly shining, a faint darker stripe may be traced each side of acrostichals when viewed immediately from in front, but this disappears and is even replaced by a light grey stripe when viewed from the side. Pleurae dull dusted grey. All hairs and bristles on thorax whitish. Both biserial acrostichals and uniserial dorsocentrals quite short, the latter however ending behind

in a long, strong prescutellar pair with a rather shorter pair in front of them. An upcurved humeral, a small intrahumeral, a posthumeral, two longer and one short notopleural, a postalar, and only two scutellar bristles, the supra-alar bristles consisting of a row of 3-4 short hairs similar in size to acrostichals; prothoracic episterna with one, and sides of prosternum with 1-2 small white bristles.

Abdomen grey, rather glistening in some lights, the white hairs at sides of tergites rather long (equally so on first five tergites) and outstanding; disc of tergites and the dull grey sternites with only a few very scattered short pale hairs. Genitalia with rather shorter anal papillae, and very much shorter and somewhat yellowish processes projecting forwards on right beneath (fig. 4), than in *nigrescens*.

Legs dusted dull greyish with only extreme knees yellow, pubescence consisting chiefly of very short scattered white hairs, but hind femora with a few longer ones above and (rather shorter) anteroventral ones, and longer ones posteroventrally on middle femora.

Wings not quite hyaline and not very whitish, veins dark brown, the elongate oval "stigma" below end of subcostal vein light brown. Only quite short whitish bristles at base of costa, compared with the conspicuous costal bristles of typical species of *Microphorus*. Squamae pale with pale fringes. Halteres pale yellow with slightly brownish base to stem.

♀. Resembling male, but frons very broad above, narrowing towards front, and bearing only a single white proclinate bristle on each side. Abdomen broader and stouter, the hairs at sides quite short, sixth segment only a little shorter than fifth, and shining black, in sharp contrast to the other dull grey segments. Legs still shorter haired than in male, without longer hairs beneath middle and hind femora.

Length about 2.25 mm.

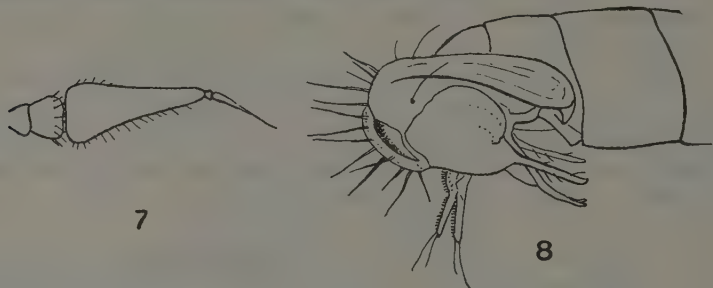
Described from specimens taken at Mariout by Prof. Efflatoun, in January and February 1922. Types in the Faculty of Science (Fouad 1st University) Collection, paratypes in collection of author.

#### ***Schistostoma cucullatum* sp.n., ♂**

Resembling *G. discretum*, but with differences in antennae and structure of genitalia.

♂. The following differences from the description of *S. discretum* should be noted: Third antennal joint (fig. 7) not so rapidly narrowing and with rather shorter pubescence. All bristles on head and thorax longer, including more distinct supra-alar bristles; prothoracic episterna with two,

and sides of prosternum with 3-4 small bristles. Both thorax and abdomen greyer, being more densely dusted and in no way shining. Abdominal hairs and bristles longer, especially on hindmargin at sides of fifth tergite. Hypo-



*Schistostoma cucullatum* spec. nov., male :

Fig. 7 : Antenna. — Fig. 8 : Hypopygium.

pygium very distinctive in shape of upper process (which is actually the ventral lamella), this takes the form of a broader spoon-shaped elongation than the narrow one of *discretum*. Legs with longer hairs and with some antero-ventral bristles about base of middle femora which are absent in *discretum*.

Length about 3 mm.

Described from a male taken at Mariout by Prof. Efflatoun on February 15th 1923. This specimen will be returned to the Collector.

***Empis demissa* sp.n., ♂ ♀.**

A dull greyish species much like *E. genualis* Strbl. in male, having thorax with three stripes, pale yellow halteres, and pale haired abdomen.

♂. Resembling *genualis* but occiput with more numerous and longer fine, dark, hairs above, and pale straggling hairs below. Antennae entirely black. Palpi more densely black haired at tip.

Thorax more evidently three striped, and the bristly hairs on these stripes longer and rather more numerous, the posterior dorsocentrals, especially not uniserial as in *genualis* but irregularly biserial. Four strong and sometimes 1 or 2 shorter scutellar bristles. Prothoracic and metapleural hairs all pale as in *genualis*.

Abdomen more densely dusted (whitish-grey), including sides and venter, but extreme sutures, sides of seventh tergite, and almost all the swollen seventh sternite somewhat shining black. Genitalia (fig. 9) of same type as *genualis*, the curved bristly hairs on last sternite usually all pale, but those on hindmargin may be dark.

Legs rather long, black, but slightly dusted greyish, base of front tibiae and all four posterior tibiae more tawny. All coxae with conspicuous pale pubescence. Front femora with an anteroventral row of fine pale hairs which are rather longer than femur is deep, and some similar hairs posteroventrally at base, but towards tip these hairs become darker and placed more behind the femur, and near tip are in more than a single row. Front tibiae



Fig. 9 : *Empis demissa* spec. nov., male genitalia.

with longer fine bristly hairs posterodorsally, and these in more than one row, gradually merging into the longer but not quite so dense pubescence behind. Basal joint of front tarsi as stout as end of tibia, stouter than next, and rather longer than next two together, but scarcely so long as next three; circlets of spines about as in *genualis*. Middle femora with an anterodorsal row of much longer, stronger bristles which are pale about base of femur, and shorter and more proclinate towards tip; beneath at base with quite a cluster of rather shorter and finer (but still conspicuous) black bristles than in *genualis*, and an anteroventral row of fine, widely spaced, bristly hairs which become very fine, short, and irregular towards tip. Middle tibiae with much longer anteroventral and dorsal bristles, and longer, much less dense, and more hair-like pubescence in front than in *genualis*; tarsi also rather less hairy. Hind femora very similar to *genualis*, the anterodorsal bristles yellowish about base of femur, the anteroventral hairs however all pale except at extreme tip of femur. Hind tibiae not quite so curved or laterally compressed, with rather shorter bristles above, and rather more dusted greyish



than in *genualis*; the last two particulars also applying to hind tarsi. Wings and halteres as in that species.

♀. Frons wide, dusted greyish, bristles on occiput shorter, and on palpi shorter and less numerous than in male. Thoracic hairs and bristles much longer than in *genualis*, from which species it also differs in *absence of pennate fringes from all legs*, only on middle femora are some hairs very slightly flattened viz those on basal threequarters anterodorsally, and on apical half anteroventrally. Hind femora anterodorsally (at least on apical half) with some short bristles, about same length as above middle femora, but anteroventrally with a row of short bristly hairs, hardly half as long as femur is deep, pale about base of femur but dark towards tip. Front tibiae with a few short bristly hairs above hardly distinguishable from other pubescence; middle tibiae with three short anterodorsal bristles, and 1-2 still shorter posterodorsal bristles, also a circlet of 4-5 round tip, other pubescence shorter than on front tibiae. Hind tibiae with 7-10 longer bristles above in irregular pairs. Basal joint of middle tarsi with a pair of short but distinct bristles beneath near base as well as a few round tip; basal joint of hind tarsi very little stouter than other joints with a bristle or two above and round tip, and spinose beneath.

Length about 4.5 mm.

Described from four males and two females captured by Prof. Efflaoun at Mariout on February 23rd and 24th 1922. A pair taken on the latter date in the Faculty of Science (Fouad 1st University) Collection representing the types, the specimens taken on the former date being in the author's Collection.

#### DOLICHOPODIDÆ.

*Tachytrochus planitarsis* Beck.

Four females only from Siwa and Khamissa, viii.35 (Arm. Coll. Exp.).

*Hydrophorus praecox* Lehm.

3 ♂♂, 12 ♀♀ from Siwa, Gara and Khamissa, v.-ix.35 (Arm. Coll. Exp.).

*Thinophilus quadrimaculatus* Beck.

One male, Siwa, 9.ix.35 (Arm. Coll. Exp.).

*Asyndetus* (= *Meringopherusa*) *separata* Beck.

Siwa and Khamissa, iv.-ix.35 (Arm. Coll. Exp.), and a number of specimens (9 ♂♂, 8 ♀♀), Lake Karoun ix.45 (Coe).

*Asyndetus connexa* Beck.

2 ♀♀, Siwa and Bahrein, vi.35 (Arm. Coll. Exp.), Lake Karoun ix.45 (Coe).

*Micromorphus albipes* Ztt.

Four specimens from Siwa, v.35 (Ann. Coll. Exp.).

**PHORIDÆ.**

*Aphiochaeta xanthozona* Strbl.

One male Siwa (Gardens), iv.35 (Ann. Coll. Exp.).

Apparently this species, though palpi are yellowish, not black, as described by Strobl. It has, apparently, only one pair of rather long supra-antennal bristles on front of frons; outer bristle of lower frontal row very close to eyemargin, and distinctly higher up on frons than inner one, which is very close to frontal margin. Mesopleural bristles all short. Hypopygium very large, whitish-yellow on a wide area across middle, darker yellow merging into brown towards base and tip, anal papillae (or cerci) very large and black, dusted with grey; ventral plate translucent, brownish-yellow, projecting somewhat diagonally from left to right as a parallel-sided band. The very short black hairs on middle of hypopygium become longer, more numerous and almost bristly on its side-margin. There appears to be a pair of distinctive long bristles, rather wide apart on hindmargin of last sternite. Legs with tarsi (especially four posterior) very slender towards tip. Hind femora practically bare beneath. Wings almost clear, with costa not extended to middle of wing, last two sections of costal vein almost equally short, each bearing only two pairs of the long costal bristles. Halteres dark. Length rather less than 1 mm.

**PIPUNCULIDÆ.**

*Alloneura dentiterebra* sp.n., ♂ ♀.

A species evidently allied to *A. mutata* Beck., with almost indistinguishable dark hairs on thorax and abdomen (including first tergite), and an incurved female ovipositor with a small tooth at base on side normally next to venter.

♂. Neither frons, nor vertical triangle, very wide, not so wide as in *littoralis* Beck., with the latter shining black behind up to hind margin of eyes only, the long frontal triangle smooth and silvery, without any distinct wart or furrow, practically as wide in front as face at middle.

Thorax viewed from above or in front greyish-brown, due to a microscopic stippling or dusting, but this dusting disappears to a large extent from disc when thorax is viewed from behind, and entirely disappears from scutellum, leaving the former somewhat, and the latter distinctly, shining black. Pubescence so short as to be scarcely distinguishable on thorax, and apparently absent from scutellum. Humeri pale yellow. There is a narrow, sharply differentiated silvery streak behind humerus extending along lower margin of notopleural depression.

Abdomen with first tergite almost silvery-grey, and with only very short hairs at sides, other tergites with a microscopic stippling or dusting less dense than on thorax and rather more brownish in colour, except on fifth tergite and hypopygium, where it is greyer. When viewed from behind the abdomen appears more shining black, and a small transversely elongated silvery patch appears on each side of fourth tergite near hindmargin, and a much larger rounded patch in a similar position on the longer fifth tergite. Hypopygium with a somewhat narrow, pointed, elongate ovate (point below), densely dusted greyish, depression on right-hand side. Anal cerci, and wedge-shaped lamellae, yellow, the latter (or at least the left one) apparently with a T-shaped widening at end after narrowing towards tip.

Legs black with only tip of all femora, but tibiae broadly at base and narrowly at tip, yellowish; tarsi yellow on basal joint (more clearly so on hind tarsi) becoming successively browner on each joint to the darkened last one. No distinctive spines or bristles on coxae or base of femora, only middle femora with very small blunt spines posteroventrally towards tip. No bristles of any kind on tibiae. Front and middle femora silvery behind, and middle ones with some very short yellowish hairs there, hind femora polished black behind, and beneath about base.

♀. Frons broadest at middle where it is silvery-grey and concave, slightly narrower at vertex than above antennae, shining black about ocellar region only, with a tridentate extension forwards, its middle tooth short, extending to the edge of concave portion, side teeth extending along sides of frons for twice the distance of middle one. Front third of frons not so densely dusted, and with black patches appearing from some points of view.

Thorax and abdomen very much as in male but four tergites (3rd to 6th) with silvery patch at sides, that on 3rd tergite very small, that on 5th larger than that on 4th, and all three transverse, the patch on 6th tergite much the largest and rounded. Ovipositor rather like the figure given by Becker for *P. mutatus*, but the slender aculeus with a distinct conical base (upon which the anal opening is placed), and armed on inner side at base of the cone with a short conical tooth; the somewhat globular basal part of ovipositor black, dusted greyish on outer side, the aculeus yellowish.

Legs with ungues and pulvilli somewhat longer than in male but not particularly long, those of hind tarsi shortest.

Length about 3.75 mm.

Described from a pair taken near Edku Salt Lake July 2nd 1944 (Coe). Another female was taken by Mr. Coe in September 1945 at Lake Karoun.

The smoother frons, presence of silvery patches on abdomen, smaller and differently shaped hypopygial depression of male, and the more dis-

tinctly conical base of aculeus in female, appear to distinguish this species from *mutatus* Beck. as originally described.

*Alloneura mutata* Becker.

A single male, answering somewhat more accurately to Becker's original description, was taken by evening sweeping, at Siwa on April 29th. 1935 (Arm. Coll. Exp.). It is slightly larger than the last species, frons rather narrower, distinctly narrower in front than width of face, but any evidence of an "eindruck" is very faint. Abdomen practically *without dusted patches* on sides of fourth and fifth tergites, hypopygium wider with a *distinctly larger depression*, while the left lamella is apparently *not* widened out T-like at tip. Ungues and pulvilli rather longer.

It should be noted that in a second paper on *Pipunculidae* in 1900 Becker included *mutatus* in his "Table of species" among those having grey patches on abdomen, a contradiction of his original description.

Representatives of other (smaller) species of *Alloneura*, but in too poor a condition to be recognizable, were captured, at Siwa (including one apparently near to *vicina* Beck.), and at Khamissa (a species near to *minima* Beck., perhaps the *A. rondanii* Coll. from Italy), by the Armstrong College Expedition.

An explanation of the reason why Rondani's generic name of *Allo-neura* is the correct one for this group of species was given in Ent. Mon. Mag. (1945), 61 : p. 3.

***Dorylomorpha helwanensis* sp.n., ♂ ♀.**

A species with eyes in male almost touching on frons (as in *maculatus* Wlk.) and hypopygium without a depression. Middle crossvein of wings slightly before middle of discal cell. Female ovipositor of very distinctive shape (fig. 10).

♂. Vertical triangle of head very narrow, shining black, with this colour extending for a short distance behind each eye on vertex, but occiput behind this part slightly dulled by dust, and below it (on ocular orbits) glistening silvery. The vertical triangle is continued as a very slender line, separating the eyes, to the narrow frons, which together with the slightly wider face is silvery. Pubescence present on posterior orbits only, and very little evident above, very short and whitish. Third antennal joint yellow, abruptly narrowing into a short point which is about as long as second antennal joint is deep; front margin of second joint and base of arista also yellowish.

Thorax shining black, slightly dulled by brownish dust, scutellum and pleurae similar but dust greyer. Humeri pale yellow. Pubescence confined

to uniserial dorsocentral rows, scattered hairs on lateral margins, and a marginal scutellar row; all hairs dark.

Abdomen shining black, first tergite rather longer than usual and dull greyish, second and third tergites with very slight dusting, but density of dust increasing towards end of abdomen, and hypopygium most distinctly dusted. When viewed from beneath indications of greyish patches appear on side-margins of tergites. Venter dusted brownish-grey. Hypopygium comparatively small, without terminal depression; anal cerci and the short blunt lamellae, or paralobes, yellow. Pubescence brownish, rather more conspi-

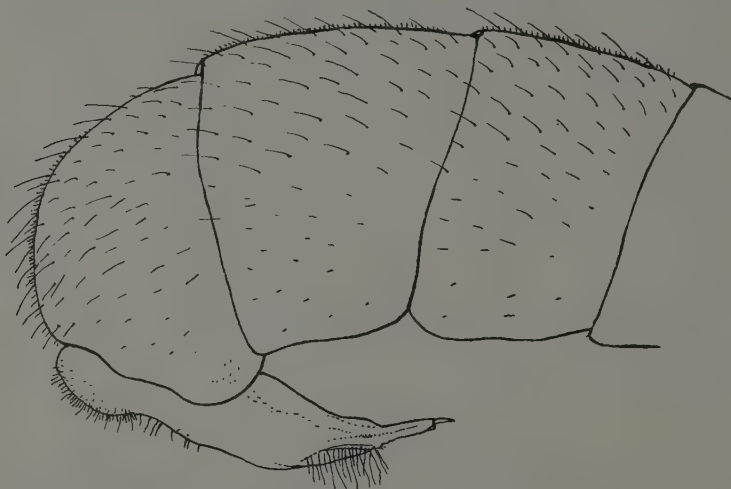


Fig. 10 : *Dorylomorpha helwanensis* spec. nov., female ovipositor.

ucus towards end of abdomen; hairs at sides of first tergite more numerous but not longer than those on sides of fifth tergite.

Legs yellow, with coxae, femora (except at tip and extreme base), and an ill-defined ring on all tibiae, darkened; tarsi entirely yellow. Only middle femora with spines (very minute) antero- and postero-ventrally towards tip; hind femora distinctly hairy behind, and posteroventrally towards tip. No bristle at middle of any tibia. Hind femora shining beneath and behind.

♀. Frons of normal width, polished black and with a slight median ridge on rather less than upper half measured from hind margin of eyes; silvery grey in front; slightly widest at front end of shining part, slightly narrowest opposite ocelli.

Thorax and abdomen as in male except for the distinctive ovipositor which is shining black on basal half, only slightly obscured by greyish dust



on the more rounded exposed part of base, then tubular and tawny to the hair-fringed anus, ending in a very short tawny, dorsoventrally flattened sharp-pointed aculeus, slightly recurved at tip. Last tergite with a small depression, variable in shape from round to triangular, at middle of hind-margin.

Legs as in male, ungues and pulvilli *not* enlarged.

Length 3-3.5 mm.

Described from eleven males and nine females taken by Mr. R. L. Coe at Helwan in November 1944.

Though this species undoubtedly belongs to the *Dorylomorpha*-group of *Pipunculus*, it is remarkably distinct in the position of middle crossvein, absence of longer bristles at sides of first abdominal tergite, and in having hind femora shining for practically the entire length behind. It is mainly these characters which distinguish the male of this species from *frontatus* Beck. described from a male taken in the Transylvanian Alps, but according to the original description Becker's species also differs in having the thorax more shining black with only the scutellum dusted brownish, and tarsi with last joint darkened. There is also nothing in Becker's description to indicate that his male had the eyes almost touching on frons. Becker subsequently described what he believed to be the female of *frontatus* from Egypt (Alexandria) which may well have been a female of *helwanensis*.

#### ***Eudorylas conjunctus* sp.n., ♀.**

A species allied to *melanostolus* Beck., having similar long curved ovipositor, but smaller and greyer, with paler legs and pale halteres.

♀. Frons comparatively narrow, and only slightly wider a little above middle, narrowest opposite ocelli; ocellar area and immediately in front of same shining black, continued forward in an evenly narrowing median line (as a very slight ridge) to a point not half-way down frons, but the ridge continued further; rest of frons silvery-grey with the continuation of the slight ridge ending (after a short break) in a short median elevation at a distance of about twice width of frons from the front margin. Eye facets in front much enlarged, the space occupied by three of the larger facets equal to greatest width of frons. Antennae missing in type.

Thorax appearing greyish in some lights, darker in others; humeri whitish-yellow (dark in *melanostolus*). Pubescence only conspicuous in notopleural region where it is scanty and pale.

Abdomen greyish with dull brownish bands on base of 3rd, 4th and 5th tergites, fading away towards sides; base of first tergite dull brown. Sixth tergite large, almost vertical in position with a semicircular membranous excision in hindmargin. Three strong black bristles on each side of

first tergite, pubescence otherwise very short, inconspicuous and brownish. Basal part of ovipositor elongate oval, mainly shining black and without farrow, it merges (with only a slight swelling on side next venter) into the long, strongly upcurved, yellowish aculeus, which gradually tapers to a point and extends to end of first sternite.

Legs with all femora rather stout, mainly black dusted greyish, but base of all tibiae broadly, and their extreme tip, together with all tarsi except last joint, yellowish. Ungues and pulvilli of front legs very long, shortest on hind legs, where they are very little longer than last joint. Each of the first four joints of hind tarsi somewhat produced at end behind, giving these tarsi a slightly dilated appearance. No posteroventral spur to first, or even middle tibiae; hind tibiae with two short black bristles at middle in front, where these tibiae are slightly swollen. Hind coxae, and noticeably base of hind femora, tawny-brown, the coxae with a long and a short outstanding bristly hair beneath, slightly towards front.

Wings clear except for stigma, the base of which (at end of mediastinal vein) is more darkened than rest giving the appearance of presence of a crossvein. Stigma and next costal segment subequal in length, and together not so long as following segment. Middle crossvein somewhat before middle of discal cell, and slightly beyond end of mediastinal vein. Halteres yellowish.

Length about 2.75 mm.

A single female taken at Helwan by Mr. R. L. Coe in November 1944.

This species belongs to a small group including *halteratus* and *melanostolus*, distinguished by the absence of a posteroventral spur to the four anterior tibiae, and the presence of a slight transverse furrow across the metanotum below the scutellum, thereby approaching towards a double convexity of that part.

*Eudorylas trochanteratus* Beck.

Two males and a female from Baharein, and two females (probably this species) from Khamissa, taken in June 1935 (Arm. Coll. Exp.).

The large male hypopygium of this species has no depression, and the lamellae, or paralobes, are large laminate processes broad at base, the left-hand one sloping off on outer side to a blunt point, the other one of equal length but more parallel-sided until near the tip.

*Eudorylas fluviatilis* Beck.

A female from Aboukir 7.x.44 (Coe), is apparently referable to this species.

## SYRPHIDÆ.

*Paragus aegyptius* Mcq.

This appears to be a common species in Egypt. 17 ♂♂ and 7 ♀♀ were taken at Siwa, Baharein and Koreishid from May to August by the Arm. Coll. Expedition, and some numbers at Helwan in November by Mr. R. L. Coe. It has, in both sexes, the face entirely, and the scutellum partly, yellow. Two other species with this combination of characters have been described from Egypt, viz *compeditus* W., and *nitidissimus* Costa. The former described from the female only appears to differ in having the frons "mit breit gelben Augenrändern", an unusual character in females of this genus. In *aegyptius* the frons of female is only dusted greyish (or yellowish-grey) at sides. Costa compared his *nitidissimus* with *compeditus* W., without mentioning the female frons. If Wiedemann was referring to the dusted sides of frons, his description might apply to a female of *aegyptius*, his name would have priority, and both *aegyptius* Mcq., and *nitidissimus* Costa would become synonyms.

Costa's description of *P. nitidissimus* is not very accessible, it reads as follows :

"Differisce dal *compeditus* per lo scutello non giallo di paglia, ma del colore fondamentale del corpo, solo nel margine posteriore bruno-gialliccio; per l'addome non bruno più chiaro alla base più oscuro in dietro, pe' femori posteriori non con fascia nera innanzi l'estremità, ma bruno-nerastri con la base e l'estremità pallidi; per la fascia nera delle tibie posteriori non nel mezzo, ma poco innanzi l'estremità."

Most of these characters are variable in *P. aegyptius*.

*Syrphus interrumpens* Wlk. (1891) (Syn. *S. rufinasutus* Big. 1884), (Syn. nov.).

Walker described this species from a female taken at Cairo. The type in the British Museum has been compared with the type of *S. rufinasutus* Big. ♀ from Morocco, and with a pair taken by the Arm. Coll. Expedition at Siwa, the male on May 27th, and the female on May 29th, 1935, and it is practically certain that they all belong to the same species. This species is obviously one of the *luniger*-group near *latifasciatus* Mcq. Both *rufinasutus* Big. and *latifasciatus* Mcq. were quite incorrectly quoted as synonyms of *corollae* F. by Efflatoun in 1922. The male of *corollae* has a large and very distinctive genitalia quite unlike that of *latifasciatus*, and *S. berberidis* Bigot has been correctly listed as a synonym.

*S. interrumpens* has the abdomen even more extensively yellow than in *latifasciatus*, especially in the male, in which sex the hindmarginal dark bands are very narrow, and do not extend to the sidemargin; only that on

second tergite is connected (at middle) to the dark area at base of the tergite, those on third and fourth tergites having only a triangular extension forward at middle. Hind margin of fourth tergite broadly yellow, and almost the whole of fifth tergite yellow. There is very little (or even no) indication of dark basal markings on tergites three and four. The insect is therefore in general appearance more like a species of *Asarcina*. The yellow markings on second tergite are continued on to, and across, the side margin of first tergite, in both sexes.

In the female the dark bands are rather wider, extend over the side-margin, and are continued upwards for a short distance along the side-margin, while there is a trapezoidal dark patch on middle of fifth tergite.

Other characters distinguishing this species from *latifasciatus* are:— the narrower upper angle of frons in male (much less than  $90^\circ$ ), the entirely yellow face and jaws (below eyes), only the extreme rim of the transverse front part of mouth opening being dark, facial prominence in profile more equally and evenly rounded above and below, legs (except coxae and trochanters) entirely yellow, even to base of all femora, only hind tarsi slightly brownish. No dark hairs anywhere on the four anterior legs, even the bristles on last tarsal joint yellow, but the short pubescence and bristles of hind legs dark except on basal third of femora and beneath tibiae and tarsi. The female is at once separable from *latifasciatus* by the presence of side dust spots on frons, and by the narrow extension forwards of its dark vertical area. The type of *interrumpens* has a much damaged head, laterally compressed and without antennae, but it is possible to see that it agrees with the characters quoted by Verrall in 1901 for the head of the female type of *rufinasutus*, which it has now unfortunately lost. As an additional misfortune the female collected at Siwa is also without a head. All the specimens however agree further in venation, presence of hairs on metasternum, and entirely yellow-haired scutellum.

*Syrphus corollae* F.

4 ♀♀ taken at Siwa in June and August 1935 (Arm. Coll. Exp.) and at Helwan in November 1944 (Coe).

*Scaeva pyrastris* L.

Helwan, November 1944 (Coe).

*Ischiodon aegyptium* W.

8 ♂♂, 5 ♀♀ taken at Siwa June to August, Khanissa June and September 1935 (Arm. Coll. Exp.), and at Helwan in November 1944 (Coe). Bezzi (1915) has pointed out that this species is distinct from *I. scutellare* F.

*Sphaerophoria flavicauda* Ztt.

1 ♂ Siwa, April 1935 (Arm. Coll. Exp.).

*Syritta latitarsata* Meq.

Very common at Siwa, also found at Baharein and Marigi (Arm. Coll. Exp.) (106 ♂♂, 124 ♀♀), and at Lake Karoun (Coe).

*Syritta spinigera* Lw.

Taken at Lake Edku in July 1944, and at Lake Karoun in September 1945 (Coe).

### Genus *Eristalis*

Of the five species of *Eristalis* sens. lat. listed below the first is the type of a subgenus *Eristalodes* Mik, and the second the type of another subgenus *Lathyrrophthalmus* Mik. This second species was also quoted as the type of a new subgenus *Metalloeristalis* Kanervo (1938), which therefore becomes an absolute synonym of *Lathyrrophthalmus* Mik. The phylogenetic importance of some of the characters used for dividing the old genus *Eristalis* into numerous subgenera, is open to question, and calls for further study. In this connection attention may be called to a character possessed by *E. megacephala* Rossi, and *tabanoides* Jaenn., which is not found in very many other species, viz the presence of distinct long hairs on the pleural sclerite immediately behind the prothoracic spiracle.

*Eristalis (Eristalodes) taeniops* W.

Two males from Helwan, November 1944 (Coe).

*Eristalis (Lathyrrophthalmus) aeneus* Scop.

This species is variable in size, colour and length of pubescence, and colour of tarsi but it would appear that the male can be recognized in all its forms by the presence of two small tufts of dark bristles on hindmargin of fourth abdominal sternite, one on each side of a slightly concave middle third section which is only microscopically pilose. There are no dull bands on the abdomen, as in other species of the subgenus.

The typical form which appears to be common all round the shores of the Mediterranean merges into the var. *taphicus* W. in Egypt. It is more or less intermediate between the darker and longer haired British var. *stygius* Newman, which does not appear to occur in Egypt, and the paler and shorter haired var. *taphicus* W. which is not uncommon there. The extreme var. *taphicus* has practically all pubescence on head, thorax, and abdomen, whitish, and shorter than usual, while the antennae and tarsi are more extensively yellow; the male has narrow and distinct grey thoracic stripes, and usually no dark hairs on second abdominal tergite; the genitalia are



practically indistinguishable from the other extreme variety (*slygius* Newm.). The female has very obvious grey thoracic stripes, of which the three middle ones are connected together in front of scutellum.

Specimens (5 ♂♂, 5 ♀♀) of the var. *taphicus*, were taken in various localities both by the Arm. Coll. Exp. and by Coe, a female of the typical Mediterranean form was taken at Siwa, two other females from that locality and from Zegawa, and especially some from Helwan (Coe) were less typical, approaching the var. *taphicus*.

An interesting, closely allied, new species, which might easily be passed over as another variety of *aeneus* is described below.

***Eristalis (Lathrophthalmus) aeruginosus* sp.n., ♂.**

Very much like a large *aeneus* Scop., differing chiefly in the rusty-red colour of abdomen, and differences (visible without dissection) in genitalia.

♂. Eyes with a tendency for some spots to coalesce on upper part, and hairs here very short and sparse. Face rather flat, with an isolated, small, and not very prominent shining black median knob. Pubescence of head whitish except on vertex and occiput where it is more yellowish, long on face, short on jowls below eyes. Antennae with first two joints extensively darkened, third joint reddish-yellow about base beneath, otherwise brownish-grey.

Thorax shining black with three narrow greyish stripes, apparently often incomplete (especially middle one) about middle, and two wider side stripes. Pleurae with distinct grey patches. Pubescence not very long, yellowish-white on disc, paler on pleurae; some dark hairs present above wing base, on postalar calli, and on extreme basal corners of scutellum.

Abdomen somewhat irregularly shining reddish-brown on third and fourth tergites and hypopygium. There is a *dull brown crossband near hindmargin of second tergite* which extends triangularly at middle towards base of tergite, and there are indications of a somewhat oblique, small, dull patch on each side of third tergite near its hindmargin, all that is left of a narrower crossband widely interrupted at the middle. Pubescence on disc short and yellowish-white, *except on a dull patch on second tergite* where it is mainly dark, longer and paler at sides, and especially long towards end of abdomen. Venter similar to dorsum in extent of reddish-brown colour. Fifth sternite not so long as in *aeneus*, with a larger extent of middle section of its hindmargin occupied by a shallow depression clothed only with microscopic pile *but without the two clusters of dark bristles of aeneus*, though with numerous long pale bristly hairs on the outer sections as in that species. The yellowish anal lamellae (or cerci) of genitalia *much longer and nar-*

rower than in *aeneus*, and paralobes or side lamellae also longer, and, not as in *aeneus* laterally, but dorsoventrally compressed. Legs with only knees noticeably yellow.

Length 10-11 mm.

Described from three males, two taken at Khamissa on June 29th 1935 and one at Siwa on July 11th of same year (Arm. Coll. Exped.).

*Eristalis* (*Lathyrophthalmus*) *megacephalus* Rossi (*quinquelineatus* Auct. nec F.).

*E. quinquelineatus* was described by Fabricius without reference to eye-markings from a female in the Banks Collection (now at the British Museum) from equatorial Africa, and this specimen, as already pointed out by Curran (1939), is an *Eristalodes* (with banded eyes), and not a *Lathyrophthalmus* (with spotted eyes). The name was, however, subsequently applied by Wiedemann, again without reference to eye-markings, to the description of other specimens in the Collection of Fabricius, and his own Collection, which were from South Africa, and these have been identified as a species of *Lathyrophthalmus*, and recorded from Egypt. If the female in the Banks Collection be accepted as the type, this Egyptian species obviously cannot retain the name of *quinquelineatus* F. It should be noted that the male of this species was thought to be undescribed until Becker in 1903 fully described it from Egyptian specimens, and Efflatoun subsequently (1922) published a coloured figure. As a matter of fact the male was recognizably described and figured by Rossi in 1794 as *Syrphus megacephalus*.

The male of this species is very different in abdominal markings from the female, having a general resemblance (as stated by Becker) to the male of *arbustorum*, but with a distinct dull whitish- or yellowish-grey band across the fourth tergite, and at least some indication of a similar narrow band across middle of third tergite. In the female the yellow patches of the male at sides of second and third tergites are very much smaller, or even absent, but greyish crossbands are present on tergites 2-5 inclusive, and form the only conspicuous abdominal markings. The female which Efflatoun figured in 1922 as var. *tabanoides* Jaenn. is almost certainly the typical form, which Macquart, appears to have figured and described in 1849 as *E. quinquevittatus* Meq. from Algeria, and which was also probably described by Meigen in an overlooked paper in Gistel's Faunus. II (1835) : p. 70, as *E. fasciatus* n.sp. (The identity of this *E. fasciatus* Mg., as well as that of *E. fasciatus* Germar (1839) is a matter of small importance because such a name is a primary homonym of *E. fasciatus* W. (1830) from Brazil).

Mr. R.L. Coe took four males and two females of this species at Helwan in November 1944 and seven females at Lake Karoun in September 1945.

*Eristalis (Lathyrrophthalmus) tabanoides* Jaenn.

Described by Jaennicke in 1867 from a female taken at Massaua (Erythrea) this species was recognized by Becker in 1903 in a female taken at Cairo, but Efflatoun in 1922, who overlooked the description of the male from Persia by Becker in 1913, considered it only a variety of the previous species. Both sexes (two pairs) were captured by Mr. Coe at Helwan in November 1944, and this capture of males proves conclusively that Becker was correct in considering the species to be distinct. These males are much more like the females than is the case in *megacephalus*, in that the abdomen has three whitish-grey cross-bands (on tergites 2-4 inclusive), the fifth tergite of course not being visible in the male, while the grey thoracic stripes are also more evident than in *megacephalus* ♂, though not (as stated by Becker for the Persian male) almost equal in width to the dark bands. The head is rather longer in proportion to its width. The difference from *megacephalus* ♂ in general appearance is very marked, much more so than differences in the females. These differences lie in the rather narrower third antennal joint of *tabanoides*, much smaller black patch on jowls below eyes, rather wider grey stripes on thorax, coalescing more broadly in front of scutellum, and in the grey band on second tergite being broader towards the sides, and not tapering off there into so long a point as in *megacephalus* ♀. Venter in both sexes of *tabanoides* usually more uniformly dull grey.

Two pairs from Helwan, November 1944 (R.L. Coe).

I have examined the type of *E. punctifer* Wlk. (1871), a female from "Tajura, Straits Bab-el-Mandib" and it is more like a quite small specimen of *tabanoides* than of *megacephalus*, especially in markings on frons—a transverse dark band (not extended to sides) on upper part of frons, convex in front, and with a slight median extension forwards; between this and the small shining black triangle above base of antennae there is a very small, dark-haired, black, spot. In *tabanoides* the transverse dark marking is more triangular (point forwards), and the dark-haired black spot is an indistinct dark-haired median line, but these markings may be somewhat variable, as they undoubtedly are in *megacephalus*. The shining patch on mouthmargin below eyes is also restricted in size as in *tabanoides*, and eyes more sparingly punctate on lower half than in *megacephalus* ♀. The ventral surface of abdomen is yellower than usual in *tabanoides* ♀. It is either a small variety of *tabanoides* or the female of a distinct species.

### CONOPIDÆ.

*Conops elegans* var. *fuscipennis* Mcq.

One male from Lake Karoun, September 1945 (R.L. Coe).

*Conops rufiventris* Mcq.

One female, Siwa, 29.iv.35 (Arm. Coll. Exp.).

*Physocephala* spp.

Eleven specimens (6 males, 5 females) probably representing several species, from Lake Karoun (4 ♂♂, 2 ♀♀), September 1945 (R.L. Coe). Siwa (1 ♀), 7.vii.35; Siwa (2 ♂♂, 1 ♀), 22.viii.35; Maragi (1 ♀), 14.viii.35 (Arm. Coll. Exp.).

### OTITIDÆ (ORTALIDÆ).

*Melieria nigratarsis* Beck.

Three males, Lake Karoun, September 1945 (R.L. Coe).

*Chrysomya demandata* F.

4 ♂♂, 2 ♀♀ from Siwa in July and August 1935 (Arm. Coll. Exp.).

A male from Helwan, November 1944 (R.L. Coe).

### TRYPETIDÆ.

*Trypeta planiscutellata* Beck.

One female from Lake Karoun in September 1945 (R.L. Coe).

*Schistopterum moebiusi* Beck.

Two females, from Lake Karoun in September 1945 (R.L. Coe).

*Trypanea stellata* Fuess.

2 ♂♂, 4 ♀♀ from Siwa in April, August and September 1935 (Arm. Coll. Exp.), and from Lake Karoun in September 1945 (Coe).

*Acanthiophila helianthi* Rossi.

1 ♀ from Siwa in September 1935 (Arm. Coll. Exp.), and from Lake Karoun in September 1945 (Coe).

### AGROMYZIDÆ.

*Melanagromyza squamata* Beck. (?=*cunctans* Mg.).

Apparently a common species at Siwa in July and August, also taken in June and September, and by "evening sweeping" in May. A few were also taken at Gara in July. All by the Armstrong College Expedition in 1935. Total 30 ♂♂, 44 ♀♀.

*Melanagromyza* spp.

Three odd specimens, two of them from Siwa (April and June), and one from Bahrein (June), differ from *A. squamata* in having dark fringes to the squamae.

*Pseudonapomyza* sp.

A single damaged specimen of this genus from Lake Karoun, taken in September 1945 by R.L. Coe.

*Cerodonta* ? *semivittata* Strbl.

Two males from Bahrein taken on 12th June 1935 (Arm. Coll. Exp.), answer to Strobl's description. They further differ from *denticornis* in that a few small irregularly placed, acrostichal bristles, are present on thorax.

**SEPSIDÆ.***Toxopoda nitida* Mcq. (= *Amydrosoma discedens* Beck).

One female taken at Lake Karoun in September 1945 (R.L. Coe).

*Saltelliseps niveipennis* Beck.

Several specimens from Lake Karoun in September 1945, and some from Aboukir in October 1944, where on 7th October what appears to be a male of the var. *robusta* Duda was also taken by Mr. R.L. Coe.

*Sepsis lateralis* W.

A female taken in June and a male in August at Siwa in 1935 by the Armstrong College Expedition.

*Sepsis* ? *fissa* Beck.

A female, apparently this species, was taken at Aboukir on 7th October 1944 by R.L. Coe under similar circumstances ("on low grass in orange grove") as the *Saltelliseps niveipennis* var. *robusta* mentioned above.

**CHAMÆMYIIDÆ.***Leucopis* sp.

Eight specimens, unfortunately in poor condition, six from Siwa and Gara in July and August 1935 (Arm. Coll. Exp.), and two from Lake Karoun in September 1945 (Coe).

**DROSOPHILIDÆ.***Drosophila fasciata* Mg. (*melanogaster* Auct.).

A single male from Alexandria, June 1944, captured by R.L. Coe.  
*Parascaptomyza disticha* Duda.

Common in the gardens at Siwa in April 1935 (Arm. Coll. Exp.).  
31 ♂♂, 68 ♀♀ were taken.



### BORBORIDÆ.

*Borborus marmoratus* Beck.

A female taken at Helwan in November 1944 by R.L. Coe.

The genus *Borborus* was described in 1803 (without mention of included species) for species having the arista "feinhaarig", therefore according to opinion 46 it cannot replace *Sphaerocera* Latr. (1804) in which the species have the arista bare. Moreover to use it in that sense would be directly contrary to the instructions given to the Zoological Commission when they were granted power to recommend suspension of the Rules in certain cases.

*Limosina curvinervis* Stenh.

A large number of specimens taken mainly in the gardens at Siwa (often by "evening sweeping") by the Armstrong College Expedition.

*Limosina vagans* var. *rufa* Duda.

Three specimens taken at Siwa in May and June, one of the former in a "light trap" by the Armstrong College Expedition.

*Limosina fuscipennis* Hal.

5 ♂♂ specimens found at Siwa, Bahrein, and Khamissa by the Armstrong College Expedition in 1935, and two at Lake Karoun in September 1945 by R.L. Coe.

*Limosina* spp.

Four indeterminable specimens in poor condition, one representative of one species from Bahrein in June 1935, and three of another species from Siwa, two in April (in moth trap), and one in August, 1935 (Arm. Coll. Exp.).

### TETHINIDÆ.

*Rhinoessa pallipes* Lw.

8 ♀♀ taken at Siwa in April, May, and August 1935 by the Armstrong College Expedition.

*Rhinoessa incisuralis* Mcq. (1850) described as *Chlorops id.* = *R. pictipes* Beck. (1903), syn. nov.

Macquart's species was stated to have been described from specimens in Bigot's Collection, and these specimens, though in bad condition must undoubtedly be referred to the genus *Rhinoessa*. It will be found that Macquart's description answers very well to the common Egyptian species hitherto known as *R. pictipes* Beck., and there appears to be no adequate reason for refusing to accept the synonymy.

20 ♂♂, 33 ♀♀ of *R. incisuralis* Mcq. were found at Siwa, many of them captured by "evening sweeping" by the Armstrong College Expedition.

#### EPHYDRIDÆ.

*Notiphila setigera* Beck.

Four females taken at Lake Karoun in September 1945 by R.L. Coe.

*Notiphila semimaculata* Beck.

This species described in 1926 from Beirut appears to be represented by two males and one female taken at Khamissa in May 1935 by the Armstrong College Expedition, and six females at Lake Karoun in September 1935 by R.L. Coe.

*Hecamede albicans* Mg.

Very large numbers of this species were present in the Collection made by Mr. Coe

*Chlorichaeta albipennis* Lw., formerly *Mosillus id.*

Sixteen specimens from Siwa, all except one taken in July (the other one in August) 1935, by the Armstrong College Expedition.

*Allotrichoma laterale* Lw.

Becker recorded this species in 1903 from Cairo in November, and specimens which I believe to be the same as Becker's were taken at Siwa in May 1935 (three males and two females), and again in September 1935 (one female), by the Armstrong College Expedition.

It should be noted that Loew described this species as having *three* bristles on face (one near the facial prominence but close to facial suture, and two lower down near mouth-margin, one above the other) as well as one on jowls below eyes. He did not mention the peculiar genital appendages figured by Becker. Becker, who stated that he had studied Loew's Collection, figured only *two* bristles on face and one on jowls, and a species in Kowarz's Collection from "Losonez" which though labelled *A. laterale* Lw., is certainly *not* the same as Becker's species of that name because of its much shorter, concealed, and differently shaped genital appendages, also has only two equally strong facial bristles, but between them is another *very small*, and *easily overlooked*, hair-like bristle still nearer to facial suture, with a second similar, and similarly placed one lower down, below the second strong facial bristle, and this is the arrangement in the Egyptian specimens of *A. laterale* from Siwa.

The thoracic chaetotaxy of these specimens and Kowarz's species is as given by Becker for *laterale* if it be accepted that by "supra-alar" he meant "post-alar", and that by a lapsus he wrote "2 Intra-alar Börsten" when he meant "2 Sternopleural Börsten". It should also be noted

that in 1926, in his figure of arrangement of thoracic bristles he indicated the presence of a lateral bristle behind the thoracic suture, to which he makes no reference, and which was *not* shown in his figure of 1896. This extra bristle is *not* present in Kowarz's species or the *A. laterale* from Egypt.

*Allotrichoma perspicendum* Beck.

Among numerous other insects taken by Mr. R.L. Coe by sweeping tamarisk bushes near Lake Karoun in September 1945, there were a large number of two species, both certainly allied to the genus *Allotrichoma* but rather stouter built, much lighter grey in colour, having no distinct post-humeral (or perhaps more correctly "presutural") bristle on thorax, all discal thoracic bristles and microchetae shorter, prescutellar dorsocentrals more nearly in line with dorsocentral row of microchetae, and prescutellar pair of acrostichals not more developed than others. In addition the males possess a remarkable internal organ in the shape of a pair of microscopically pilose tubes, projecting backwards, lying side by side, *within* the elongate fourth abdominal segment. Three finger-like tubes with bluntly closed ends are almost as long as the fourth segment. Though this segment is similarly lengthened in *Hecamede albicans* and *Allotrichoma*, the tubes *are not present*. It still remains to be discovered whether they are present in the (apparently otherwise very similar) South American genotype of *Pseudohecamede* Hendel.

This genus *Pseudohecamede* was founded by Hendel in 1936 upon three specimens of a species he had identified as being *Hecamede* (subsequently *Allotrichoma*) *abdominalis* Willist. They were from "Santorem, Unter Amazonas" (one specimen), and "Paraguay, San Bernhardina, Fiebrig" (two specimens). Williston's types were from the Island of St. Vincent. One of the two characters used by Hendel for distinguishing this genus from *Allotrichoma* was that the outer (proclinate) of the two orbital bristles was either entirely absent, or placed somewhat *in front* of the inner (reclinate) orbital bristle, whereas in *Allotrichoma* it was placed *behind* this latter. Personally I have found the presence or position of this bristle at most of only specific importance, and the fact that in two cotypes (females) of *Hecamede abdominalis* Willist. in the British Museum Collections, this bristle is almost exactly opposite the reclinate orbital seems to indicate that Hendel's South American species was probably *not* the same as Williston's. There is also another specimen in the British Museum with a manuscript label in red ink "*Hecamede abdominalis* n.", but it is from "Grenada, W.I., W.H. Smith, Mount Gay Est, Leeward Side." It is headless and in poor condition but I believe it to be a male because of certain ornamentation of the legs. The hind tibiae bear a few longish

hairs anteroventrally at tip (not a short row of outstanding anterodorsal hairs as in *Allotrichoma laterale* Lw.) and the middle tibiae bear a cluster of still longer hairs at tip beneath and posteroventrally, the longest (in latter position) quite two-thirds the length of the long first joint of middle tarsi. It is possible therefore that Williston included more than one species under his *abdominalis*.

The status of this S. American genus *Pseudohecamede* Hend. and whether it is represented in Egypt by Coe's two species must remain a matter for further investigations. For the present it is proposed to retain these two Egyptian species as representing a group in the genus *Allotrichoma*.

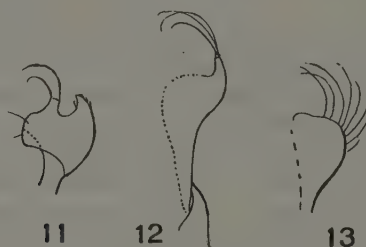


Fig. 11 : *Allotrichoma perspiciendum* Beck., genital appendage of male. — Fig. 12 : *Allotrichoma agens* spec. nov., genital appendage of male. — Fig. 13 : *Allotrichoma agens* var. *simplicior* nov., genital appendage of male.

Becker in 1903 described *perspiciendum* together with another new Egyptian species (*chnumi*) as representatives of a new genus *Elephantinosoma*. It is quite certain from an examination of some of his original series of each species, that they really belong to two quite distinct genera, Becker having entirely overlooked (among other points) the long fourth abdominal tergite in the male of *perspiciendum*. Cresson in 1929 from an examination of specimens captured in Becker's original locality for both species (the Island of Elephantine) also came to the conclusion that Becker's two species of *Elephantinosoma* were not congeneric, and retained the generic name for *E. chnumi*, placing *perspiciendum* in the genus *Allotrichoma*. This species *A. perspiciendum* Beck. was one of those captured freely by Mr. R.L. Coe under circumstances mentioned above. It is very similar to the species I have described more fully as *A. agens* sp.n., but rather smaller, and otherwise differing as follows :

Frons and thorax not quite so grey, rather more yellowish-grey, frontal triangle wider in front, in fact occupying almost the whole width of frontalia leaving only a narrow blackish line of the latter visible, frontal orbits

rather wider towards front of frons, with two proclinate orbitals, *both very minute* (the upper one often almost indistinguishable), one behind, the other in front of, the stronger reclinate orbital. Rarely more than four curved hairs on arista.

Abdomen more obviously yellow on first and second tergites, and on hind-margins of third and fourth tergites. Hypopygium bright yellow. Genital appendages of male much shorter, consequently not so conspicuous, and of different shape (fig. 11). Abdomen usually even more extensively yellow in female, and the telescoped anal segments yellow, not dusky.

Length about 1-1.25 mm.

***Allotrichoma agens* sp.n., ♂ ♀.**

A grey species with almost silvery abdomen, whitish wings, and all tibiae and tarsi (except last 1-2 joints) yellow.

♂. Frons wider than long at middle. Head very concave behind viewed from above; frontal orbits grey, about as wide as second antennal joint seen from above; frontal triangle rather more yellowish-grey, large, almost equilateral, extending practically to the silvery lunule above antennae, leaving rest of frontalia dull black very slightly dusted greyish. The usual inner and outer vertical bristles and a pair of rather smaller post-ocellar bristles form a transverse row on vertical ridge; a second transverse row, slightly *in front* of anterior ocellus, is formed by the proclinate and reclinate orbitals (of equal length) and the pair of ocellar bristles. Face somewhat golden brown in the distinct antennal foveae, which are separated by a similarly coloured nose-like keel, this being straight above in profile and ending rather abruptly some distance above front mouth edge, this lower part of face (which is not retreating) silvery, similar to the deep jowls which at narrowest front part are deeper than third antennal joint is long, and widen out very much behind. Two bristles on lower part of face close to facial suture, upper (and the longer) one about half-way between eyemargin and mouthedge. A distinct bristle and 3-4 hairs on lower half of jowls. Antennae with first joint concealed, second distinctly grey, with a distinct upright bristle above at base, and a small proclinate one near tip, third joint rather longer than broad, dull black, dusted greyish. Arista with five successively shorter curved hairs above, basal one very long, apical one very short. Clypeus trough-like, *shining black*, the posterior part capable of movement downwards. Palpi yellow. Proboscis longer than usual with yellowish, geniculate, labellae.

Thorax grey, somewhat yellowish-grey on disc, sidemargins appearing darker when viewed from above, but almost silvery viewed from the side. Microchetæ not numerous, especially the quadriserial acrostichals; the



uniserial dorsocentrals somewhat more closely placed and ending behind in a strong prescutellar bristle, the only other distinct bristles being one longer and one short and fine humeral, two notopleurals (posterior one placed further away from pleural suture), and one postalar. Scutellum with four large and two quite small (between the larger) bristles round margin, also one or two pairs of small hairs on disc. Pleurae grey, but upper part of mesopleurae golden-brown, this mesopleura with two strong hindmarginal and some scattered dark hairs, but sternopleura with only a short hair-like bristle in place of the usual strong upper sternopleural, and 2-3 other tiny dark hairs.

Abdomen almost silvery-grey with the conical fourth tergite about half its total length. Pubescence short and very scanty. Sides of second and third tergites often somewhat translucently yellowish. Venter mainly membranous and yellowish. The peculiar laminate, translucent and yellowish genital appendages with long curled terminal hairs (fig. 12). Each of the usual cerci with a pair of long dark hairs at tip.

Legs mainly yellow, but four posterior coxae and all femora except at tip, greyish; last two joints of all tarsi darkened. Front coxae with a single outstanding and rather distinct black bristle at middle in front. The last two of the 5-6 small anterodorsal hairs on hind tibiae stand out rather more at right angles to tibial shaft. Wings whitish with yellow veins, radial vein very long, cubital and discal somewhat convergent towards tip of wing. Outer crossvein twice its own length from wing margin. Halteres pale yellow.

♀. Similar to male, but fourth abdominal tergite not greatly lengthened, and fifth nearly half as long as fourth. The last three obvious tergites very silvery, but the telescoped anal segments dusky.

Length 1.25-1.75 mm.

Swept commonly from tamarisk bushes near Lake Karoun in September 1945 by Mr. R.L. Coe.

#### ***Allotrichoma agens simplicior* var. n.**

Apparently differing from typical *agens* only in having the pair of hypopygial appendages of the male less developed (fig. 13).

In species of *Allotrichoma* a difference in the structure of these processes has been accepted as indicating a distinct species, and this may prove to be true in the present case, but as the available material (two males and a probable female) are from a locality where the type form was not captured, it may possibly represent only a local race.

2 ♂♂ and 1 ♀ taken at Bahrein, on 12th June 1935, by the Armstrong College Expedition.

**The genus *Atissa* Hal., and its subdivisions.**

This genus of small, or very small, Ephydrids was founded by Haliday in 1839 upon his own species *Ephydra pygmaea* Hal. (1833) which was taken in a salt marsh on the seacoast near Holywood, Co. Down, Ireland, and since then the following Palaearctic species have been added :

*A. durrenbergensis* Loew (1864) from the salterns at Durrenberg, South of Halle (Germany).

*A. limosina* Becker (1896) from the seacoast near Christiana (Norway).

*A. acrostichalis* Becker, *hepaticoloris* Becker, and *kairensis* Becker (1903), from Alexandria, Assuan and Cairo (Egypt) respectively.

*A. orsovana* Enderlein (1922) from Orsova on the Danube (Hungary).

*A. angustigenis* Becker (1926) from Novi, near Fiume, on the Adriatic Coast, the specimens having been included by him in 1903 under the name *acrostichalis*.

These species may easily be separated into two groups on characters first pointed out by Cresson in 1926 when he founded the genus *Pelignus* for those species with the ocellar pair of bristles placed anterior to a transverse line passing through the front ocellus, and with a pair of postocellar bristles well developed. The position of middle crossvein of wing, nearer wing-base (before end of subcostal vein) appears also to be distinctive. Cresson designated as genotype a specimen of *A. durrenbergensis* Lw. received from Europe, and stated that the same species occurred in the State of Utah (U.S.A.). Subsequently (in 1929) Cresson, without comment, placed *A. durrenbergensis* Lw. in a genus *Atissiella* which he had previously (in 1918) founded for a new species (*A. setulosa* Cress.) from Costa Rica, and then in 1942, again without comment, described as *Pelignus salinus* sp.n. the species from Utah which, in 1926 he had identified as *Atissa durrenbergensis* Lw. It was not until 1944 that Cresson explained that these two changes were made because he had come to the conclusion that his original specimens of *A. durrenbergensis* from Europe was incorrectly named. A conclusion apparently arrived at because he had subsequently examined a specimen in the Vienna Museum standing under the name *A. pygmaea* but with three labels :

(1) "*Atissa durrenbergensis* Lw.", (2) "Mik", and (3) "Roeder".

This species which was not a *Pelignus*, was apparently accepted by Cresson as the true *durrenbergensis* Lw., a conclusion which was certainly incorrect because the type of Loew's species, according to Dr. E.M. Hering, who critically examined it at my request, is a species of *Pelignus*, and so is the *A. durrenbergensis* Lw. recorded as British by me in 1911. Of course Cresson's specimen of *A. durrenbergensis* from Europe still remains the type of the genus *Pelignus* Cress., and would appear to have been correctly identified.

Dr. Hering has further informed me: that the type of *A. acrostichalis* Beck. and *A. angustigenis* Beck., are also species of *Pelignus*; the type of *A. kairensis* Beck. is an *Atissa*; the sole representative and type of *A. hepaticoloris* Beck. has been destroyed; the type of *A. limosina* Beck. is no longer in Becker's Collection, but four specimens from Poland determined by Becker are an *Atissa*; the type of *A. orsovana* End. is also an *Atissa*; finally that the specimens of *A. durrenbergensis* recorded by Becker from Egypt and the Canary Isles, are not Loew's species of that name but a species of *Atissa*. The only species of *Pelignus* recorded by Becker from Egypt was therefore the one he described as *A. acrostichalis*, but the one species in the Collections from Egypt before me does not agree with Becker's description of *acrostichalis* nor with that of *angustigenis*, and is certainly not the same as British *durrenbergensis*, it is therefore described as:

***Pelignus fundatus* sp.n., ♂♀.**

Resembling British *P. durrenbergensis* but basal joints of antennae yellowish though dusted greyish, jowls below eyes narrower, legs more extensively yellow, and wings whitish in some lights. A grey species with frons very slightly, and middle of disc of thorax and scutellum rather more brownish; abdomen almost silvery grey.

Head similar to that of *durrenbergensis* but jowls below eyes narrower, at narrowest part rather deeper than third antennal joint is long, and rather more than one quarter height of eye. The posterior (and usually somewhat smaller) of the two small proclinate orbital bristles decidedly in front of the reclinate orbital. Facial bristles similar in both species, usually four (sometimes 3, rarely 5) short small bristles *very* close to facial groove, and two longer bristles in front of them, more out on face, all similarly orientated (pointing somewhat downwards and curving inwards). A rather small bristle somewhat low down on jowls below eyes, and a few very small hairs, some along mouth-margin, others close to eye-margin posteriorly; postocular ciliation scanty and inconspicuous.

Thorax with but few and scattered hairs but these all rather long. There are only about five pairs of acrostichals, the prescutellar pair longest; there is another long bristle opposite each lateral corner of scutellum, presumably the last of a dorsocentral row of an additional four small bristles, but it is placed rather outside the line of these small bristles, which as a consequence might be taken for an outer row of acrostichals. Longer bristles at sides of thorax comprise a (rather small) humeral, a presutural, two notopleural (posterior one not more than twice as far from notopleural suture as front one), and one post-alar. No distinct supra-alar bristle. Scutellum

with 4-5 short hairs on disc, four long strong marginal bristles and two fine hairs on each lateral margin *below* the line of marginal bristles. Pleurae with the usual mesopleural and sternopleural bristles.

Abdomen with a few scattered (and all about equally short) dark hairs. Legs grey, with trochanters, extreme base and tip of femora, at least base and tip of tibiae (in female almost whole of tibiae), and tarsi, except last joint, yellowish. Middle femora (of male only) armed, as usual in males of both this genus and *Atissa*, with a posteroventral row of short black spines on apical half, composed in this species of about five spines. Wings of a somewhat opaque sandy colour, not quite so brown as in *durrenbergensis*, and appearing whitish in some lights. Veins yellow. Middle crossvein well before end of subcostal vein, second and third costal segments subequal in length, the combined second basal + discal cell about as long as last section of discal vein. Halteres very pale yellow.

Length often less than 1 mm.

Described from a male and three females taken near Lake Karoun in September 1945 by R.L. Coe, and eight specimens caught at Bahrein in June 1935 by the Armstrong College Expedition.

This species appears to differ from *acrostichalis* Beck. in having basal antennal joints paler, jowls below eyes narrower, and wings not so absolutely clear, and from *angustigenis* Beck. also by paler basal joints to antennae (in *angustigenis* only the third joint is stated to be pale beneath), wider jowls, and more equal second and third costal segments (in *angustigenis* stated to be in proportion 1:1.5).

With regard to the genus *Atissiella* Cresson (1918), mentioned above, a genus in which Cresson in 1929 included not only the Egyptian species *A. kairensis* as represented by a paratype sent to him by Dr. Bezzi, and three specimens from Pavia (Italy) identified by Becker as *A. pygmaea* Hal., but also the species in the Vienna Museum which he (Cresson) had incorrectly accepted as correctly identified by Mik, and Röder, as *A. durrenbergensis* Lw.

This genus *Atissiella* was originally described as similar to *Atissa*, but with face conically prominent and epistoma retreating, the prominence bearing a pair of stout upcurved setae, and subsequently in 1942, and again so late as 1946, the two genera were distinguished in "Tables" by Cresson as follows:

Face conically prominent above epistoma, with a median pair of upcurved setae ..... *Atissiella*.

Face conically prominent near epistoma, without such pair of upcurved setae ..... *Atissa*.

The facial bristles of *A. kairensis* were described by Becker as "am

Rande der Wangen", and there does not appear to be any Palaearctic species with a "median pair" of upcurved setae on the face. It is true that one of the lateral facial bristles may be "dorso-laterally" inclined, indeed such is the case in *A. pygmaea* — type of the genus *Atissa*, but so far as one can judge from descriptions of the genotype of *Atissiella* there would appear to be no justification whatever for the inclusion of *A. kairensis* Beck., or any other Palaearctic species in the genus *Atissiella*.

In 1936 Enderlein published a new generic name *Atissina* for two species *A. orsovana* End. (1932), and *A. durrenbergensis* Lw. (1864), but without designating a genotype, for this reason *Atissina* Enderlein as a new generic name, published after December 31st, 1932, was without standing in nomenclature, but Cresson in 1936 validated the name by selecting Enderlein's *A. durrenbergensis* Lw. as type. Apparently therefore *Atissina* End. is a synonym of *Pelignus* Cress.

*Atissa pygmaea* Hal.

Of this species only one damaged specimen was taken at Siwa on April 24th, 1935, by the Armstrong College Expedition. This species is the genotype, and in view of the fact that it has not always been correctly recognized, it may be advisable to give some further particulars of its characters from British specimens. The genus *Atissa* differs from *Pelignus* in having the ocellar bristles placed close together, one on each side of, and just behind the front ocellus, while the postocellar pair of bristles are quite small. In *A. pygmaea* both the very small proclinate orbital bristles are placed in front of the much stronger reclinate orbital, the anterior proclinate rather nearer to front of frons than it is to the reclinate orbital (quite the reverse of its position in *Pelignus*). Face concave in profile, with facial bristles appearing as a single row of three, all near mouth-margin, but the hindmost one (nearest to jowls and very close to facial suture) is more upcurved and really represent a bristle of the sutural row of *Pelignus*, and moreover a second bristle of this sutural row is usually represented by a microscopic whitish hair (very difficult to see) higher up on the suture. Thorax with presutural bristle (above notopleural depression) very insignificant; posterior notopleural bristle much higher upon disc (more than twice as far above notopleural suture) than the anterior bristle. Acrostichals quadriserial but occasionally only biserial owing to an irregular development of the outer row. Outside the acrostichals is the more complete row of small dorsocentrals, which (as in *Pelignus*) terminates behind somewhat on the inner (median) side of the strong prescutellar pair of dorsocentrals. When stronger prescutellar acrostichals are developed they are not so strong as the prescutellar dorsocentrals. Second costal section of wing distinctly longer than third, and outer crossvein only very



faintly clouded. Postical vein forming lower margin of discal cell curved (convex below). As stated by Haliday this is a glaucous species with frons and thoracic disc partly brownish, antennae extensively yellow, and tarsi yellowish.

Becker who recorded this species in 1903 from numerous localities in Egypt had previously (1896) described it in his monograph as having four "Börstchen am Rande der Wangen" in two rows, and second costal segment "Kaum länger als der dritte", so it is doubtful whether he correctly recognized Haliday's species. While according to Cresson, Becker named Italian specimens of his own species *kairensis* as *pygmaea* Hal., and returned them, so named, to Bezzi.

The only other species described by Becker as having a concave face like that of *pygmaea* is *A. hepaticoloris*, for this reason it appears certain that the species Cresson in 1929 identified as *hepaticoloris* Beck., is not that species, though it may be *limosina* Beck., and the species which Cresson at the same time identified as *limosina* Beck., may be *hepaticoloris* Beck.

*Atissa limosina* Beck. and *kairensis* Beck.

Though *A. limosina* has not yet been found in Egypt it may be useful to record some details of the characters found in British specimens. The type of this species, originally stated to be in Becker's Collection, was collected on the Norwegian Coast near Christiana, and our specimens from the East Coast of England are therefore very possibly the same species. Unfortunately the original type, according to Dr. Hering, is no longer present in Becker's Collection.

Our British specimens agree with Becker's description of *A. limosina* except that the halteres are yellow (Becker described them as "blassbraun"). His figure of the wing shows the section of postical vein forming lower side of discal cell *straight*, as in our species, and Strobil could not have had this species before him when (in 1900) he recorded *A. limosina* from Spain as having this vein "bauchig nach aussen gekehrt." The proclinate bristle on second antennal joint is much longer in this species than in *pygmaea*, almost as long as third antennal joint; the anterior proclinate orbital bristle is also much stronger (half length of reclinate orbital), and placed on the same level as this latter, with the second (quite small) proclinate orbital *above* it, but close to it. Face in profile slightly (convex) *not* concave as in *pygmaea*, with bristles in two rows, a *facial row* of two incurved bristles of almost equal size, and rather close together on upper part of side of face, and a *sutural row* of two (or sometimes three) very small, down- and outwardly-curved bristles close together also on upper part, and, lower down (nearer mouth margin) a much longer more

upwards- and outwardly-curved bristle. Thorax with six rows of microchetæ within the width of disc included between the single pair of prescutellar strong dorsocentral bristles, and between these latter a single pair of (not quite so strong) prescutellar acrostichals. A strong and distinct presutural bristle above the anterior notopleural bristle. Posterior notopleural bristle nearer to pleural suture than in *pygmaea*, an approach towards the position in *Pelignus*. Second section of costa longer than third.

Mr. R.L. Coe captured a single female specimen at Lake Karoun in September 1945, of a species closely allied to *A. limosina* Beck., which I thought, at one time, might be a specimen of *A. kairensis* Beck. It has a similar profile, and chaetotaxy of head and thorax, to that of *limosina* (as described above) *but all bristles smaller*, while the anterior proclinate orbital bristle is *in front of* the reclinate orbital, the tibiae pale at both ends, and tarsi pale. Second and third sections of costa practically equal in length. Postical vein below discal cell not so straight as in *limosina*, but also not so much curved as in *pygmaea*, and its last section is not twice as long as the infuscated crossvein closing discal cell. This specimen has unfortunately received some damage since I critically examined it. If Cresson's recognition of *A. kairensis* Beck. was correct (and he stated that he possessed, among other specimens, a paratype given to him by Bezzi, v. note earlier under *Atissiella*), Coe's specimen cannot be *kairensis* Beck. because of Cresson's statement under the description of his *Atissiella pleuriseta* (1942) of the *absence* of strong prescutellar bristles in Becker's species. In Coe's specimen there are four such bristles (two dorsocentrals, and two acrostichals) well developed.

*Psilopa pectinata* Hend.

This species was probably identified and recorded by Becker as *P. compta* Mg. The character of presence of ten hairs on arista used by Hendel for distinguishing *pectinata* appears to be untrustworthy, they may be from seven to ten such hairs. The palpi however are, I believe, always yellow (whereas in *compta* they are dusky), and front coxae are always somewhat yellowish, only shown in *compta* in immature specimens. There are differences in the shape of the male genital gonapophyses, the main pair in *pectinata* being slender (of almost equal width throughout), *curved pointed processes*.

10 ♂♂ and 18 ♀♀, mostly in poor condition, were taken at Siwa and Khamissa, from April to July, by the Armstrong College Expedition, and a single specimen at Lake Karoun in September by R.L. Coe.

*Psilopa aequalipes* Beck.

The antennae in this species are dark but the third joint (as noted by Becker) has a reddish-brown tinge. It would appear that *P. nigricornis*

Hendel described in 1931 from a single Egyptian specimen, which had the third antennal joint somewhat brown about the base, and otherwise agree with *aequalipes* Beck., is most probably a synonym. The male genitalia are abundantly distinct from those of British *nigritella* Stnh., having large gonapophyses (as large as in *nana* Lw.) but shaped more like a bird's head with a pointed beak. *P. nana* Lw. has the outer crossvein slightly infuscated, and darker legs.

Apparently quite common at Baharein in June 1935, but also taken in the Siwa Depression in April and May by the Arm. Coll. Exp. (total 29 ♂♂ and 62 ♀♀), and at Lake Karoun in September by R.L. Coe.

*Psilopa flavipalpis* Beck.

A few specimens of this species were taken at Helwan in November 1944 (Coe), one at Baharein 12.vi.35, and one at Siwa 9.viii.1935 (Arm. Coll. Exp.).

*Psilopa nana* Lw.

Three specimens found at Lake Karoun in September 1945 (R.L. Coe).

***Psilopa rufibasis* sp.n., ♂♀.**

A species with outer crossvein of wing darkened, and often some indication of the end of cubital vein darkened. Allied to *fratella* Beck., and *nigriacies* Beck., but primarily distinguished by the reddish base (sometimes embracing the first four tergites) of abdomen.

Antennae not so clearly yellow as in *leucostoma* Mg., third joint particularly infuscated and decidedly pubescent; arista with 7-9 hairs above. Face not so densely dusted, and palpi yellowish, not dark as in *leucostoma*.

Thorax and abdomen not much obscured by dust, the latter always to a greater or less extent reddish-yellow about base, sometimes very extensively so.

Legs entirely yellow, even last tarsal joint not noticeably brownish. Wings short and narrow even for so small an insect, veins pale yellowish about base only, squamae also same colour. Only outer crossvein obviously and rather broadly clouded, this cloud very little evident above discal vein, and still less below postical vein, while its outer margins are indistinct. Last section of postical vein blackish. There is a very small and faint cloudy spot at end of cubital vein at tip of wing. Halteres whitish yellow. Length about 1 mm.

22 ♂♂ and 32 ♀♀, unfortunately all in poor condition were taken at Baharein on 12th June, and two at Siwa in June and September, 1935. A single male in better condition was captured by Mr. R.L. Coe at Lake Karoun in September 1945.

*Psilopa biskrae* Beck.

A single specimen answering to this species was taken by Mr. R.L. Coe at Lake Karoun in September 1945.

*Psilopa composita* Beck.

A single specimen which I refer to this species in spite of its poor state of preservation was taken by "evening sweeping" at Siwa on 29th April 1935 by the Armstrong College Expedition.

*Psilopa rufithorax* Beck.

Several specimens of this distinct species were found near Lake Karoun in September 1945 by Mr. R.L. Coe and some were taken at Baharein (4 ♂♂) in June, and Siwa (2 ♀♀) in August 1935 by the Armstrong College Expedition.

*Psilopina electa* Beck.

Two specimens (apparently a pair) taken at Lake Karoun in September 1945 by R.L. Coe. It appears probable that Becker's genus *Psilopina* (1926) is a synonym of Cresson's N. American genus *Typopsilopa* (1916).

*Discocerina (Diclasiopa) galactoptera* Beck.

Two males from Lake Karoun, September 1945 (R.L. Coe). Becker in 1926 when adopting the genus *Diclasiopa* Hend., did not include this species but left it in *Discocerina*. According to the above two specimens it is intermediate between the two genera (or supposed genera). The lowermost (upcurved) facial bristle is short and fine, but distinctly outside the line of the other two strong facial bristles; the supra-alar bristle is smaller than in *xanthocera* Lw. (?=*lacteipennis* Lw.), and not preceded by an accompanying smaller bristle as in that species; the costa between the two "breaks" near base, has much shorter spines (or spine) mixed with the usual ciliation; there are 1-2 very tiny proclinate hairs on front half of frontal orbits, and 1-2 slightly more conspicuous ones on middle of frons in front of ocellar bristles. The fifth tergite measured on middle line above is barely half as long as the curved under sides lying beneath, and two long, narrow, grey, lobes of the hypopygium extend for nearly this whole length beneath.

*Scoliocephalus pallidisetis* Beck.

Two specimens taken by Mr. R.L. Coe, one at Helwan in November 1944, and the other at Lake Karoun in September 1945. The frons bears two (rarely three) proclinate orbitals on front half, all of them in front of the reclinate orbital, and the anterior much the longer. On thorax the following bristles are present in addition to those mentioned by Becker: a small humeral, a presutural, and a strong postalar bristle.

*Glenanthe fasciventris* Beck.

A much damaged specimen of (probably) this species was taken at Siwa on 18th April 1935 by the Armstrong College Expedition.

*Philygriola picta* Fln.

A single specimen from Siwa 21-22.v.1935 (Arm. Coll. Exp.).

*Hydrellia griseola* Fln.

Three males and twelve females from Siwa, taken in August and September (Arm. Coll. Exp.).

*Homalometopon albiditinctus* Beck.

A number of specimens (11 ♂♂ and 21 ♀♀), apparently of this species, were taken by the Armstrong College Expedition at Khamissa on 29th June, and two at Siwa on 14th June, 1935. It is necessary however to indicate some points in which these specimens differ from Becker's descriptions. There are normally only three (not four) fronto-orbital hairs, and these are *not* usually *inclined outwards*, the upper one being reclinate and the other two proclinate. There are a few hairs on face between the line of fine facial bristles and eyemargin; jowls below eyes very wide and almost bare; no distinct ocellar bristles. Third antennal joint slightly yellowish, arista distinctly pubescent both above and below. Thorax with a very small humeral bristle, a small posthumeral, and distinct postalar bristle in addition to those mentioned by Becker in 1903. No prescutellar except the dorsocentral pair (cf. Becker's description of *tunisia* 1907). Fifth abdominal tergite much lengthened in male (longer than third and fourth combined), and of considerable length in female. Male hypopygium, which lies beneath the long fifth tergite, with a very large oval depression, in which the large cerci lie, and ending in two long finger-like processes, dull grey on their exposed side, but otherwise shining black, and which extend forwards to the hindmargin of fourth sternite. The longer hairs on apical half of middle femora are in front not beneath, and middle tibiae, in both sexes, are somewhat dilated by being compressed.

Becker in copying his original description for publication in Lindner's "Die Fliegen" (1926), wrote of the facial bristles as "auf den Wangen" instead of the original "auf der Gesichtsfäche", and they are incorrectly figured "auf den Wangen" in text figures 115 and 116. He also (apparently incorrectly) figured a distinct pair of ocellar bristles. It is here that he admitted the synonymy of his genus and species *Tunisia platycephala* (1907) from the sea-coast of Tunis.

*Ephydra bivittata* Lw.

A single male from Siwa 18th April 1935 (Arm. Coll. Exp.).



*Scatella tenuicosta* Coll.

A single female, referable only to this species, from Siwa 9th August 1935, (Arm. Coll. Exp.).

*Scatella indistincta* Beck.

Seven specimens in poor condition from Siwa 9th August 1935, and one from Khamissa 29th June 1935 (Arm. Coll. Exp.).

*Scatella rubida* Beck.

This entirely yellow-legged species with pale third antennal joint was found at Siwa (1 ♀) and Baharein (2 ♀ ♀) in 1935 by the Armstrong College Expedition, and at Lake Karoun in September 1945 by Mr. R.L. Coe.

### CHLOROPIDÆ.

#### *Haplegis rufipes* sp.n., ♂ ♀.

A species resembling *H. diadema* Mg. (*rufifrons* Lw.), but third antennal joint smaller and entirely of a rich yellow colour. Legs, including coxae and trochanters yellow, only base of hind femora somewhat brownish. Wings white with pale yellow veins; cubital vein ending further from tip of wing above, than end of discal vein does below it, more so than in *diadema*.

Length 1.75-2.25 mm., both sexes variable.

Two males and three females taken at Baharein 10th-12th June 1935. (Arm. Coll. Exp.).

*Metopostigma tenuiseta* Lw.

One female from Khamissa 29th April 1935 (Arm. Coll. Exp.), and two males and three females from Lake Karoun in September 1945 (R.L. Coe).

*Lagaroccras megalops* Beck.

Two specimens taken at Helwan in November 1944 by R.L. Coe.

*Chlorops lucidifrons* Beck. (the variety as described by Becker).

Five specimens from Lake Karoun in September 1945 (R.L. Coe).

A *Chlorops ruficeps* was described by Macquart in 1850 from specimens in Bigot's collection. There were originally two specimens under this name in that collection. Of one (bearing Macquart's label, only a leg is left. The other specimen cannot be the type because the costa is continued to the end of discal cell (Oscinid type of venation), *not* as described by Macquart "nervure costale ne s'étendant que jusqu'à la sous-marginale". The species must remain unrecognizable.

***Chloropisca pallida* sp.n., ♂ ♀.**

A bare shining species resembling *glabra* Mg., but much more extensively yellow.

Head yellow with only the small area enclosed by ocelli, and third antennal joint darkened. Frons shining with the large frontal triangle very little differentiated though usually outlined at sides by a slightly darker yellow line, and with a similar median line. Middle part of occiput yellowish-brown with extensions upwards towards posterior corners of frontal triangle. Jowls below eyes as wide as third antennal joint. Clypeus yellow. Microscopic pale hairs are scattered over frontal triangle and frons. A pair of tiny black (outer) vertical bristles, but the inner pair microscopic.

Thorax with the usual stripes, but they are only darker yellow, where they are brownish the darkening is internal (below the surface), extreme front of middle stripe, a longitudinal patch on lower part of mesopleura, and metanotum beneath scutellum, always blacker. Other pleural patches on sterno-, hypo- and ptero-pleurae only darker yellow. A very short fine humeral, and minute prescutellar dorsocentral bristles, a rather more distinct anterior, and two posterior, notopleurals, and a postalar bristle, all dark. The strongest bristles are a pair, close together, at tip of scutellum. As in *glabra* the disc of thorax and scutellum are not absolutely bare, but bear scattered, microscopic, pale hairs. There are also a few such hairs on hindmargin of mesopleurae. Scutellum very pale yellow except about the darker yellow base.

Abdomen with a varying extent of darkening on tergite except at sides and on more than apical half of fifth tergite which are always yellow, and hindmargins of other tergites are often to a greater or less extent yellowish. Basal part of abdomen often extensively yellow. Male hypopygium small, yellow, and pale haired. Female ovipositor with rather darker yellow, and pale haired, terminal papillae, or cerci.

Legs yellow with last three or four joints of front tarsi more brownish. Wings whitish-hyaline with yellow veins. Radial vein not as straight as in *glabra*, and ending, slightly upcurved, further from wing-tip. Halteres pale yellow with dark yellow stems.

Length about 2 mm.

Described from fourteen specimens, twelve taken at Siwa 12th June 1935, and two from Zegawa (Siwa) on 13th May 1935, by the Armstrong College Expedition.

***Eurina scapularum luteola* var. n., vel sp.n.**

According to Becker's description, and Duda's redescription of one of Becker's cotypes of *scapularum*, the frontal "triangle" is dulled at sides; clypeus black; vertical bristles about as long as orbitals.

Thoracic stripes "roth-braun"; pleural markings brown; apparently a brown stripe along notopleural margin, in addition to three thoracic stripes. Becker gave pubescence of mesonotum and scutellum as short and *black*. Duda gave pubescence on and about the brown thoracic stripes as short and *pale*. Abdomen with wide dark brown lateral stripes as well as a narrow median stripe. Becker gave the dorsal abdominal pubescence as glistening whitish. Duda gave it as black.

Wings with distance between crossveins scarcely double length of outer one

Length 4.5 mm.

A long series of thirty-four specimens taken at Baharein in the second week of June 1935, and one at Siwa in July 1935, represent a paler coloured variety or species, thoracic stripes and pleural markings being only somewhat darker yellow than ground colour. Frontal "triangle" not dull at sides; clypeus yellow; the only vertical bristle (outer one) distinctly stronger than the very short and fine orbitals; middle thoracic stripe often with indications of division into two by a narrow, grey line; side stripes divided into two behind suture; no notopleural stripe; thoracic pubescence dark on hinder part, on sides of disc, and on scutellum, pale elsewhere. Mesopleurae with scattered black hairs, and 2-5 such hairs on pteropleurae, but sternopleurae with indistinct pale hairs. Abdominal pubescence pale except for some towards end of abdomen. Median abdominal stripe narrow and yellowish-brown, side stripes scarcely evident. Crossvein of wings about as far apart as length of outer one.

Length 4-6 mm. (usually about 5 mm.).

*Aphanotrigonum fasciella* Zett.

This species appears to be not at all uncommon in Egypt (Siwa, Khamsa, El Arig, Gara (10 ♂♂ and 23 ♀♀), and Lake Karoun (3 ♂♂ and 2 ♀♀)). These Egyptian specimens have the third antennal joint practically entirely yellow, and wings rather more whitish than in British specimens, but otherwise appear to be inseparable.

#### ***Aphanotrigonum subfasciella* sp.n., ♂♀.**

Very much like *fasciella* but differing as follows: Vertical and ocellar bristles shorter, but the scattered small hairs on frons *more conspicuous because darker* (brown or brownish-black). *Prothoracic episterna dusted greyish*, and a narrow, transverse, dusted band on lower side of prothoracic spiracle.

♂, ♀. Frons mainly yellow, only frontal triangle dull dusted greyish. Antennae, face, jowls and palpi, yellow, the first named rather richer yellow.

Thorax dusted dull greyish; scutellum much wider than long, with a pair of apical black bristles placed wide apart, and near them a second much shorter, lateral pair, its surface with numerous short hairs arising from black punctures as on thorax. Prothoracic sternum yellow.

First two abdominal tergites mainly yellowish, second with a longitudinal median dark band, and a dark spot at each basal corner, third to fifth tergites in male with a transverse brownish band across base, each with a median extension towards hindmargin; in females the bands have a tendency to divide up into median and lateral dark markings, especially on third tergite.

Legs, including front coxae, yellow; only hind femora inconspicuously brownish, and hind tibiae with a dark ring, blackest on a postero-dorsal "brand". Middle femora brownish about base beneath.

Length 1-1.25 mm.

Described from two males taken at Aboukir in October 1944, on "low grass in orange grove" and three females at Lake Karoun in September 1945 by R.L. Coe.

*Aphanotrigonum favillaceum* Beck.

A species which I refer, with some doubt to the *Notonaulax favillacea* of Becker was also found by Mr. Coe at Lake Karoun. It comes near to the British *A. inerme* Coll. having no small anteroventral black spur to hind tibiae, and prothoracic episterna dusted, but the antennae, legs, and abdomen are not so much darkened and even the stronger bristles on thorax as well as head are pale. In 1910 Becker sank this species as a synonym of *Conioscinella frontella* Fln., but his own description of *favillacea* makes this synonymy impossible. This species as in *inerme* has two somewhat indistinct impressed lines, more evident on hinder part of thorax, which apparently caused Becker to describe it as a *Notonaulax*.

*Tricimba humeralis* Lw.

Apparently not an uncommon species from April until August at Siwa and Gara (Arm. Coll. Exp.) (15 ♂♂ and 17 ♀♀).

#### ***Lioscinella mimica* sp.n., ♂ ♀.**

A species superficially like *Hapleginella laevifrons* Lw., but frontal triangle only outlined by a row of hairs, which are not actually on the triangle, and disc of thorax with a slight coating of greyish dust.

♂, ♀. Whole of frons shining; frontalia only distinguishable from the large frontal triangle by being more glistening. Antennae, face, and front part of jowls below eyes, yellowish, the first-named somewhat darkened above, the second dusted greyish. Scutellum slightly wider than long, not flattened, with a pair of long apical bristles not very close together, a short

lateral hair near each bristle, and 3-4 very short hairs on disc. Agreeing with *Lioscinella* in having disc of thorax with somewhat dense scattered hairs and only one posterior notopleural bristle.

Abdomen dusted like thorax and with scattered yellowish-brown hairs. Legs mainly yellow with femora more or less brownish (especially hind pair), and at least hind tibiae with a brownish ring. Wings clear, middle crossvein slightly before end of subcostal vein, somewhat beyond middle of the combined second basal and discal cell, and end of this cell with upper inner angle only very slightly more acute than lower angle. Postical vein ending in hindmargin distinctly before middle of hindmargin. Halteres pale yellow.

Length about 1 mm.

Described from about a score of specimens found at Lake Karoun in September 1945 by R.L. Coe.

This species in general shape and comparatively short wings more resembles an *Oscinella* than a *Lioscinella*, but the chaetotaxy of the thorax is definitely that of the latter genus.

*Microneurum ornatifrons* Lw. (*maculifrons* Beck.).

Three specimens taken at Aboukir on 7th October 1944 by R.L. Coe. *Elachiptera flavofrontata* Beck.

This is a species with entirely yellowish thorax, and rather short rounded scutellum with marginal bristles *not* arising from warts or projections. Two males were taken by R.L. Coe one at Aboukir on 7th October 1944 on 'low grass in orange grove', the other at Lake Karoun in September 1945.

Note: In 1871 Walker described an *Oscinis rufescens* from Cairo, and there are four specimens in the British Museum Collections labelled as "Co-types" and "Arabia", but apparently *not* by Walker. The label "Arabia" is probably a mistake due to the fact that the paper in which *O. rufescens* was described dealt with species collected both in Egypt and Arabia. I have examined these "cotypes" and find that they are *not* specimens of *Elachiptera bimaculata* Lw., as given by Duda in Lindner's *Chloropidae*, but probably the same as *E. trisulcata* Beck., though the thoracic hairs are not "black" as stated by Becker for *trisulcata*, but brownish (perhaps faded from age), Duda has placed *trisulcata* Beck. as a synonym of *E. pubescens* Thall., but Walker's *rufescens* are certainly not even varieties of the *E. pubescens* as represented by British specimens, because, apart from colour differences (especially of thorax) the arista is not thickened by pubescence *only*, as in *pubescens*, but is distinctly compressed



laterally as well as pubescent, and the palpi, while equally long, are not so stout.

A specimen standing with Walker's co-types, labelled as from Nyasaland and "*Elachiptera* sp. ! (*rufescens* Wlk. ?) Det. Sabrosky" is remarkably different in one respect. It has a distinct black anteroventral spur to hind tibiae, about as long as tibia is wide at tip.

***Elachiptera lenis* sp.n., ♂ ♀.**

A species with yellow frontal triangle, mainly yellowish occiput, dark and entirely dusted disc of thorax and scutellum, and the latter with bristles arising from distinct "warts".

♂, ♀. Frontal triangle entirely yellow and shining, only dusted (greyish) on hind corners. The very small area between the closely approximated ocelli slightly brownish. Distance of end of frontal triangle from front of frons about equal to length of second antennal joint. Two orbital bristles on each side of frons as usual. Occiput yellow with only two small brownish patches above neck. Antennae yellow with basal upper corner of third joint, on outer side, brownish-black, and this colour extends to point of origin of the broadly compressed black arista. Clypeus and palpi yellow. Jowls below eyes entirely yellow, and in depth not  $\frac{2}{3}$  vertical diameter of third antennal joint.

Thorax black but appearing dull greyish on disc owing to a complete covering of grey pollen. Humeri distinctly, and postalar calli indistinctly yellowish. Punctate lines are only faintly visible, and when thorax is viewed from behind, otherwise their position is only indicated by a slight divergence of the whitish pubescence. The four-six scutellar tubercles are about the same size as in *cornuta*. Pleurae black with rather indistinct reddish-yellow patches about base of each coxa, shining except on certain pollinose patches including a large triangle just in front of wing-root, the lower part of sternopleura, and a vertical stripe which includes base of halteres.

Abdomen in male somewhat shining yellowish-brown, often paler about base and sides. In female the extreme hindmargin of fifth tergite, and the small sixth tergite whitish-yellow. Bristles and pubescence on whole insect (except that on arista) pale, almost whitish-yellow. Legs entirely yellow except for a brownish tint (often very faint) about middle of hind tibiae. Wings pale yellowish, veins pale. Squamae and halteres very pale yellow.

Length 2-2.25 mm.

Described from one male and three females, all captured at Cleopatra on 22nd July 1921, by Prof. Efflatoun.

This species evidently resembles *E. graeca* Beck., which however (according to Becker) has the end of scutellum yellow, and last portion of postical vein twice as long as crossveins are apart, whereas in *lenis* it is not quite one and a half times as long. Also, according to Duda, *graeca* has the jowls below eyes rather wider than third antennal joint, and darkened on lower margin, the upper part of occiput brownish, and palpi brown.

The British species to which Duda's varietal name of *rufifrons* has been applied, differs from *lenis*, *inter alia*, in having more extensively darkened occiput, entirely black (though dusted greyish) humeri, and two (lateral) shining black stripes on the otherwise dusted thorax.

#### CARNIDÆ.

*Desmometopa M-nigrum* var. *niloticum* Beck.

270 specimens from Siwa (Arm. Coll. Exp.). This variety is a somewhat blacker insect than the type form, with frontal orbits not so distinctly dusted, the black "M" on frons more glistening, all bristles and hairs of whole insect shorter, labellæ of proboscis shorter, legs shorter (especially tarsi) and all shorter haired.

Becker (1907) professed to recognise *D. tarsalis* Lw. (originally described from Cuban specimens with entirely black palpi and pale tarsi), from among his specimens of *niloticum*, and Hendel 1907 considered that *D. singaporensis* Kert. (1899) was a synonym of that species. There is a considerable amount of variation in Egyptian specimens in the extent and intensity of darkening at tip of palpi, but I have seen none with entirely black palpi. The tarsi often have a reddish tinge. I suspect that Becker's *tarsalis* was only an extreme form of what appears to be a very common Egyptian species. I have seen no specimen from Egypt agreeing with Kertész's figure of wing venation of his *singaporensis*, or any specimens with the *very narrow jowls* of that species.

*Leptometopa rufifrons* Beck.

Also extremely common (42 males and 53 females) at Siwa, and found elsewhere in Egypt.

*Leptometopa latipes* Mg.

6 ♂♂ and 10 ♀♀ from Siwa, 13th to 28th August 1935 (Arm. Coll. Exp.).

Note: There is a pteropleural bristle present in both *Leptometopa rufifrons*, and *latipes*, which is not present in *Desmometopa*.

#### *Hemeromyia anthracina* sp.n., ♀.

An entirely shining black species with somewhat whitish wings, and indistinctly yellowish tarsi.

Head generally resembling that of *Meoneura*, shining black; frontal triangle not quite reaching front of frons, its front part microscopically punctate, laterally a few very small hairs; front of frons with a pair of crossed bristles, postvertical bristles small, close together and parallel. Facial orbits (or cheeks) very narrow; jowls below eyes quite half as deep as vertical diameter of eye; vibrissal angle with 3-4 strong bristles arranged fan-like, no continuous row of bristles towards back of head. Antennae widely separated at base, lying in deep foveae separated by a continuous band about as wide as second antennal joint, first joint hidden, second with a small upward- and outwardly-curved bristle, arista rather short and bare. Proboscis somewhat elongate but labellae quite small and terminal, not bent back as in *Desmometopa*.

Thorax shining, only very finely punctate with 1+3 pairs of dorso-centrals, no prescutellar acrostichals, one humeral, 2 notopleural, one presutural, one supra-alar, two postalar, and four scutellar bristles. No prothoracic or pteropleural bristle (the genotype, was described as having a small pteropleural bristle). Other hairs on disc of thorax comparatively short and inconspicuous, especially scanty on hinder part. Mesopleura (as in *Meoneura*) with an upturned bristle on lower front part, and a bristle pointing backwards at upper hind corner. One sternopleural bristle.

Abdomen shining and only very finely punctate. Second to fifth segments almost equal in length, sixth much shorter. No very distinct hind-marginal or lateral bristles.

Legs normal, black with only tarsi more or less yellowish, most distinctly so on first 1-2 joints of hind tarsi, less distinctly so on front tarsi. Front femora with a row of 3-4 short bristles both posterodorsally and posteroventrally towards tip; middle femora with 4-5 still shorter bristles anteroventrally towards tip, hind femora with a single distinct anteroventral bristle shortly before tip. Tibiae without preapical bristles and only middle tibiae with apical spur.

Wings whitish with yellowish veins; alar squamae well developed pale yellowish-white, thoracical squamae vestigial. Costa extended to end of discal vein, discal cell ending far beyond middle of wing, the last section of postical vein about equal to length of outer crossvein, discal vein equally distinct for its whole length, second basal and anal cells small but quite distinct. Halteres very pale yellow, with brownish base to stem.

Length about 2.25 mm.

Described from a single female captured at Mariout on the 15 February 1923, by Prof. Efflatoun, which will be returned to him.

The wider jowls without a row of bristles, and the venation will distinguish this species from the *Agromyza remotinervis* Strbl. placed in

Coquillett's American genus *Hemeromyia* by Hendel in 1920 (Verh. z.-bot. Wien, p. 72). The American *H. washingtona* Mel. (*nitida* Mall.) appears, from the descriptions to bear a greater resemblance to *H. anthracina*, but according to Malloch's figure of the head, the proboscis is shorter and stouter and there is a continuous row of bristles on jowls from vibrissae to lower hind corner of eye.

***Meoneura nitidiuscula* sp.n., ♂ ♀.**

A species resembling *vagans*, *exigua* and *freta* in having only one pair of dorsocentral bristles on thorax, but front of frons usually distinctly reddish, all head bristles shorter, and thorax more distinctly shining.

♂, ♀. Ocellar triangle not, or very little, differentiated from rest of frons. Antennae small and situated in deep foveae which are smaller than usual, the triangular lower part of face consequently large, the upper point of triangle quite halfway up face and black, not yellowish as in *freta*. Frontal bristles and hairs *very short*, the two pairs of upper (outcurved) orbitals, for instance, not longer than a side of the triangle made by ocelli.

Thorax and scutellum in no way dusted though microscopically somewhat punctate, and *more sparingly haired than usual*.

Abdomen shining, the first three tergites practically bare except at sides. Genitalia of male similar to that of *freta*, but without the strong bristles on shell, side lamellae similarly simple in outline but rather longer and larger with sides more parallel and end more truncate (in fact more strap-like).

Legs black with yellowish tarsi.

Wings white with pale veins. Halteres pale yellow.

Female remarkable for shortness of anal papillae, or cerci, rendering it very difficult (the male hypopygium being small) to distinguish the sexes.

Length, scarcely 1 mm.

Nine specimens taken at Siwa 21st August 1935, and one on 15th July 1935 (Arm. Coll. Exp.).

**HIPPOBOSCIDÆ.**

*Hippobosca camelina* Leach.

A female was taken by Mr. R.L. Coe at Helwan in November 1944, and a male at Lake Karoun in September 1945.

There appears to be a sexual difference in the chaetotaxy of scutellum. In both sexes there is a fringe of short yellowish bristly hairs on the lower surface of apical margin; in the male there is another fringe (or irregular

row) of much stronger, darker bristles *on upper apical margin*, the bristles at middle of the row being shorter and paler; in the female this upper row is composed of only 5-6 bristles which are *much further from margin* (more on disc) of scutellum.

*Lynchia maura* Big.

A specimen taken at Alexandria in November 1944 by Mr. R.L. Coe.

#### **CORDYLURIDÆ.**

*Scatophaga stercoraria* var. *merdaria* F.

One male from Siwa 13th August 1935 (Arm. Coll. Exp.).





# R Die Microlepidopteren der Brandt'schen Iran-Ausbeute

## 1. Teil

(mit 4 Tafeln)

Dr. H.G. AMSEL, Buchenberg (Baden)

### A. ALLGEMEINES

Als ich im Jahre 1944 die Freude hatte, Herrn Wilhelm Brandt in Herrala (Finnland) aufsuchen und seine Lepidopteren-Sammlung besichtigen zu dürfen, war es mir vergönnt, seine prachtvolle Iran-Ausbeute in ihrer Gesamtheit kennen zu lernen und bewundern zu können. Die Vorstellungen, die ich mir auf Grund der Veröffentlichungen über die Macro-Lepidopteren dieser Ausbeute gemacht hatte, wurden bei weitem übertroffen, und ich gestehe, kaum je eine in jeder Hinsicht so prachtvolle und umfassende Sammlung gesehen zu haben. Man muss schon an die grossen klassischen Sammlungen denken wie sie Staudinger, Lederer, Mann, Christoph, Turati, Chrétien oder Walsingham in unermüdlicher Lebensarbeit zusammengebracht haben, um eine annähernde Vorstellung vom Umfang, der Bedeutung und Vollständigkeit dieser Ausbeute zu bekommen. Alles, was bisher aus Persien in die europäischen Sammlungen gekommen war, ist zusammengenommen nur ein Bruchteil dessen, was Fred Brandt in jahrelanger, unermüdlicher Arbeit aus Persien heimbrachte. So ist Persien, das bisher zu den am wenigsten bekannten Ländern des vorderen Orients gehörte, mit einem Schlage in die Reihe der bestbekannten gerückt, eine Behauptung, die wir umso eher aufstellen können, als die Brandt'sche Ausbeute aus allen Teilen Persiens Material enthält und zu allen Jahreszeiten gesammelt wurde. So wird durch diese Sammlung eine Uebersicht über die Fauna dieses räumlich so grossen Gebietes vermittelt, wie sie grossartiger garnicht gedacht werden kann. Wenn in späteren Zeiten einmal eine Uebersicht über die Spitzenleistungen sammlerischen Könnens auf lepidopterologischem Gebiete gegeben werden sollte, so wird mit an erster Stelle die Leistung Fred Brandt's in der Erforschung Persiens genannt werden müssen! Zum Ruhme dieser Ausbeute muss weiter gesagt werden, dass die

7) Sauberkeit und hervorragende Präparation des Materiales unübertroffen ist, alle Tiere mit grösster Sorgfalt etikettiert wurden, auch meist grössere Serien der einzelnen Arten vorliegen, die die Variationsbreite der Spezies in genügender Deutlichkeit dartun. Kurzum, auch in allen diesen so wichtigen Punkten, die vom wissenschaftlichen wie vom aesthetischen Gesichtspunkt aus gleichermassen wichtig sind, ist das Material als musterergütig zu bezeichnen, eine Bearbeitung daher von unüberbietbarem wissenschaftlichem Wert.

So war es mir eine besondere Freude, als Herr Wilhelm Brandt sich entschloss, die Determination der Micro-Lepidopteren mir anzuvertrauen. Es ist mir ein aufrichtiges Bedürfnis, Herrn W. Brandt zu danken, für die Liebenswürdigkeit und das Vertrauen, das er mir hierdurch entgegengebracht hat. Die Freude hierüber war umso grösser, als meine besondere Liebe seit langem dem vorderen Orient und der eremischen Fauna des altweltlichen Wüstengürtels gilt. Die Studien über die palästinensische Fauna, die ich 1930 beginnen und seitdem auf weitere Gebiete des mediterranen und vorderasiatischen Raumes ausdehnen konnte, wurden durch die Brandt'sche Iran-Ausbeute daher aufs glücklichste ergänzt und erweitert. 1) Zudem war mir eine Bearbeitung persischer Micro-Lepidopteren auch deswegen so besonders willkommen, weil Herr Konsul E.P. Wiltshire (Kairo) schon vor Beginn des 2. Weltkrieges seine umfangreiche Microlepidopteren-Ausbeute aus dem Iran und Irak mir zur Determination übersandt hatte, nachdem Meyrick die Arbeit an diesen Tieren nicht mehr weiterführen konnte. Auf diese Weise kamen auch alle Typen Meyricks aus Persien und Mesopotamien zur unmittelbaren kritischen Nachprüfung zu mir und konnten zugleich für die Bearbeitung des Brandt'schen Materiales herangezogen werden.

Bei dem ausserordentlichem Umfang der Ausbeute und den durch die Zeitverhältnisse bedingten Schwierigkeiten, war es unmöglich, die Ergebnisse der Bearbeitung eines so riesigen Materiales auf einmal vorzulegen. Vielmehr blieb nichts anderes übrig, als eine fortlaufende Veröffentlichung der einzelnen Teile herauszugeben, um am Ende in einer allgemeinen Uebersicht eine Zusammenfassung des Erreichten zu vermitteln. Zunächst sollen die neuen Arten (vermutlich mehrere Hundert) beschrieben, später die schon bekannten behandelt werden.

Was diese Neubeschreibungen anlangt, so schien es unerlässlich von jeder Art eine Darstellung der männlichen Genitalien zu geben, da die neuere Forschung immer deutlicher zeigt, dass nur dadurch ein einwandfreies Wiedererkennen der Art gewährleistet ist. Der Verfasser ist der Auffassung, dass jede Neubeschreibung ohne Genitaluntersuchung als unvollkommen anzusehen ist und daher abgelehnt werden muss.

Bei der Beschreibung selbst wurde es für richtig gehalten, eine kurze Diagnose, die alles Wesentliche Enthält, der eigentlichen Beschreibung voranzustellen. Leider ist bei den meisten Autoren in den letzten Jahrzehnten eine scharfe Gliederung in Diagnose und Beschreibung nicht mehr vorhanden, ein Mangel, der umso schmerzlicher ist, als bei der Fülle der Neubeschreibungen nichts notwendiger ist als eine rasche Orientierungsmöglichkeit, wie sie nur durch knappe, alles Entscheidende enthaltende Diagnosen gegeben werden kann. Man vergleiche z.B. die mustergültigen Diagnosen mit anschliessenden Beschreibungen bei Heinemann-Wocke, Schmetterlinge Deutschlands und der Schweiz (1877) mit den langatmigen Ausführungen in Kennels Monographie der paläarktischen Tortriciden (1921), um den Unterschied, der in dieser Hinsicht auf unserm Gebiet eingetreten ist, klar zu erkennen. Ich war daher bemüht, hier an Heinemann wieder anzuknüpfen, der mir als der vollendete Meister in der deskriptiven Lepidopterologie erscheint.

Der Text der Beschreibung ist ausführlich gehalten, um alle Einzelheiten auch wirklich genau darzustellen. Dies ist notwendig, da man immer wieder bei der kritischen Beurteilung nahestehender Arten feststellen muss, dass die Originalbeschreibungen früherer Autoren mangels Genauigkeit oft nicht ausreichen, um eine klare Entscheidung treffen zu können. Um das Aufkommen aller Unklarheiten von vornherein zu vermeiden, sind die Beschreibungen daher so ausführlich gehalten, dass nach menschlichem Ermessen die Arten einwandfrei wiedererkannt werden können. Zur Unterstützung des geschriebenen Wortes sind von allen Arten, bei denen dies möglich und von Wert ist, die rechten Vorderflügel gezeichnet worden. Eine fotografische Wiedergabe der vollständigen Tiere selbst wurde vermieden, da bei der Kleinheit der Objekte die Genauigkeit der Wiedergabe nicht möglich ist. Jedenfalls kann durch solche Zeichnungen mehr erreicht werden als durch die Fotografie, und ein Verzicht auf jede bildmässige Darstellung schien dem Verfasser als dem Zweck der Veröffentlichung direkt entgegen stehend. Wohin die reinen Beschreibungen ohne Bilder oder Genitaldarstellungen führen, das hat in erschreckender Weise Meyrick mit seinen Massen-Beschreibungen gezeigt, die in den meisten Fällen die Arten nicht einwandfrei klarstellen und somit letztlich nur eine Belastung der ohnehin schon kaum noch übersehbaren Literatur bedeuten.

Im allgemeinen geht die Beschreibung jeder Art auf 2-3 Exemplare zurück, da Herr W. Brandt, um eine unnötige Gefährdung des kostbaren Materiales durch das Risiko des Versandes zu vermeiden, die vollständigen Serien bei sich behielt. Die Auswahl dieser wenigen Exemplare erfolgte jedoch so, dass sie die Variationsbreite einigermaßen erkennen lassen. Die Typen und Cotypen befinden sich alle in der Sammlung W. Brandt, Co-

typen von den meisten Arten auch in meiner Sammlung, für deren Ueberlassung ich Herrn W. Brandt auch an dieser Stelle noch einmal aufrichtig danke. Die Genital-Präparate der Arten sind sämtlich in meiner Sammlung.

Da die Fundorts-Etiketten, wie schon erwähnt, von grosser Genauigkeit sind, in ihrer Länge aber nicht immer wiederholt werden können, wird zunächst ein Verzeichnis aller vorkommenden Namen gegeben:

Bender Tchahbahar, am Golf von Oman (Belutschistan).

Binaloud-Gebirge, bei Meched (Khorassan), 1500-3400 m.

Chiraz, ca. 1600 m. (Provinz Fars).

Comée, Dorf Comée mit dem Berge Barm-i-Firus (2600-3750 m.) gelegen im Gebiet des Kuh-i-Dinar, an der Strasse Ardekan-Talochosroe (Provinz Fars).

Dalaki, ca. 100 m., gelegen an der Strasse Kazeroun-Bouchir in der Ebene vor Bouchir (Prov. Fars).

Fort Mian-Kotal, ca. 2000 m., an der Strasse Chiraz-Kazeroun (Prov. Fars).

Fort Sengan, 1800 m., im Kouh i Taftan (1800-3300 m.) im nörd-östlichen Belutschistan.

Fort Sengan, 1800 m., im Kouth i Taftan (1800-3300 m.) im nörd-östlichen Fars).

Fort Sine-Sefid, ca. 2200 m., an der Strasse Chiraz-Kazeroun (Prov. Fars).

Kemaredj, ca. 1500 m., an der Strasse Kazeroun-Bouchir (Provinz Fars).

Keredj bei Teheran (Elburs-Gebirge).

Meched (Khorassan).

Sardze, ca. 200 m., an der Strasse Bender Abbas-Saidabad (Laristan).

Tahte Malek, ca. 750 m., an der Strasse Bender Tchahbahar-Iranchar (Belutschistan).

Tchouroum, ca. 1000 m., Dorf an der Strasse Kazeroun-Bouchir (Prov. Fars)

Kouh i Taftan, ca. 1800-3300 m. (nördliches Belutschistan).

Ueber den landschaftlichen Charakter dieser Fundorte hat W. Brandt in seinem "Beitrag zur Lepidopteren-Fauna von Iran" (*Ent. Rdsch.*, 1938, pp. 60-63, 68, 71) durch die Wiedergabe einiger sehr schöner Bilder einigen Aufschluss gegeben.

Ueber die Microlepidopteren Persiens liegen bisher folgende Veröffentlichungen vor:

1. V. Kollar und L. Redtenbacher, Ueber den Charakter der Insektenfauna von Südpersien (*Denkschr. Akad. Wiss. Wien mathem.-*



*naturw.*, Cl. 1, pp. 42-53 (1850). Die von Kollar verfasste Aufzählung der Lepidopteren enthält 3 Pyraliden, darunter eine als Noctuide neu beschriebene aus der Provinz Farsistan (Umgebung von Schiraz), die einzigen bisher existierenden Angaben über Microlepidopteren Südpersiens. Die Originale zu dieser Arbeit befinden sich im Wiener Museum.

2. Lederer, Verzeichnis der von Herrn Jos. Haberhauer bei Astrabad in Persien gesammelten Schmetterlinge (*Hor. Soc. Ent. Ross.*, 6, pp. 73-93, t. 4, 5 (1869). Enthält 17 Arten Microlepidopteren, 6 davon werden neu beschrieben.

3. Th. Bienert, Lepidopterologische Ergebnisse einer Reise in Persien in den Jahren 1858 und 1859, 56 Seiten. Leipzig (ohne Datum; die Angaben über die Erscheinungszeit schwanken zwischen 1869, 1870 und 1871). Bringt Mitteilungen über Lepidopteren des östlichen Elburs-Gebirges (Astrabad und Schahrud) sowie einige wenige, aber die einzigen bisher existierenden, über die Provinz Chorassan.

4. Lederer, J., Nachtrag zum Verzeichnis der von Herrn Jos. Haberhauer bei Astrabad in Persien gesammelten Schmetterlinge (*Hor. Soc. Ent. Ross.*, 8, pp. 3-28, t. 1, 2 (1870). Die Microlepidopterenliste ist bedeutend artenreicher als die der ersten Arbeit Lederers und enthält 9 Neubeschreibungen.

5. Christoph, H., Weiterer Beitrag zum Verzeichnisse der in Nordpersien einheimischen Schmetterlinge (l.c., 10, pp. 1-55, t. 1 (1873)). Behandelt das östliche Elbursgebirge (Astrabad, Hadschyabad, Schahrud, Schahkuh. Artenreiche Liste von Microlepidopteren mit 6 Neubeschreibungen).

6. Christoph, H., Sammelergebnisse aus Nordpersien, Krasnowodsk in Turkmenien und dem Daghestan (l.c., 12, pp. 181-299, t. 5-8 (1876)). 9 Microlepidopteren werden neu beschrieben.

7. Christoph, H., Entomologische Reise im Süden des Caspisees (*Ztschr. Ent. Breslau*, N.F., 16 (pp. 1-16, 1891)). Schilderung der Sammelreisen des Verfassers ins östliche Elbursgebirge mit gelegentlichen Angaben über Microlepidopteren.

8. Guenther, R.T., Contributions to the Natural History of Lake Urmia, NW. Persia, and its Neighbourhood (*Journ. Linn. Soc. London*, Zool., 27, pp. 345-453, t. 29, 30 (1899) (p. 411-414 Lepidoptera Phalaenae by G.F. Hampson)). Zählt 8 Pyraliden, eine *Orneodes spec.* und 3 unbestimmte Tineiden aus dem Gebiet des Urmia-Sees in der Provinz Aserbeidschan auf.

9. Le Cerf, F., Contribution à la faune lépidoptérologique de la Perse (Délégation en Perse, *Annales d'Histoire Naturelle*, Tome II, Entomologie, Fasc. 2, Paris 1913, 88 Seiten, 2 Tafeln, 1 Karte). Die Aufzäh-

lung enthält 6 Mikrolepidopteren-Arten, davon eine neu aus den Provinzen Kurdistan, Luristan und Arabistan.

Diesen 9 Veröffentlichungen, die ich der Zerny'schen Publikation in *Ztschr. Oesterr. Ent.*, V, 24, pp. 130 (1939) entnehme, sind noch folgende Arbeiten hinzuzufügen :

10. Zerny, H., Ueber paläarktische Pyraliden des k.k. Naturhistorischen Museums in Wien (*Ann. Naturh. Hofmus. Wien*, 28, pp. 295-348, 1914). Enthält die Beschreibung einer neuen Rasse von *Crambus perlellus aurellus* sowie Fundortsnachweise.

11. Rothschild, Lord, Moths of Mesopotamia and N.W. Persia, Part I, Noctuidae, Lemoniidae and Pyralidae (*J. Bombay Nat. Hist. Soc.*, Vol. XXVIII, Nr. 1, pp. 170-183, 1921). Enthält eine artenreiche Liste von Pyraliden aus Nordwest-Persien sowie die Beschreibung von 12 neuen Arten bzw. Unterarten.

12. Osthelder, L., Neue Kleinfalter aus dem Tahte Soleiman in Nord-Persien (*Mitt. Münch. Ent. Ges.*, Bd. 28, Heft 1, pp. 17-29, 1938). Bringt die Beschreibung von 15 neuen Arten und Unterarten.

13. Zerny, H., Mikrolepidopteren aus dem Elburs-Gebirge in Nord-Iran (*Ztschr. Oesterr. Ent.*, V, 24 Jahrg., pp. 129-138, 148-149, 159-160, 171-175; 25. Jahrg., pp. 20-24, 42-48 und Taf. XI, 1939-1940). Enthält eine artenreiche Liste mit Beschreibung und Abbildung von 15 neuen Arten und Unter-Arten.

14. Wiltshire, E.P., Middle East Lepidoptera, VIII : Some more new species and Forms from Iran (*Ent. Rec.*, 1947, pp. 125-127). Enthält die Beschreibung 3 neuer *Ethmia*-Arten bzw. Unterarten und Abbildung auf T. V.

16. Meyrick, E., Exotic Microlepidoptera II (1920) bringt die Beschreibung von einer *Argyroproce*- u. einer *Bucculatrix*-Art aus Nordwest-Persien.

#### Abkürzungen

Vfgl. = Vorderflügel; Hfgl. = Hinterflügel; Hleib = Hinterleib; Irand = Innenrand; GU = Genital-Untersuchung; Spw. = Spannweite; Oseite = Oberseite; Useite = Unterseite; Vrand = Vorderrand; Iwinkel = Innenwinkel.

### B. SYSTEMATISCHER TEIL

#### PYRALIDAE

Die Gattung *Eromene*. Die Untersuchung eines ziemlich umfangreichen Materiales von Arten der Gattung *Eromene* hat gezeigt, dass hier Arten vorkommen, die ausserlich nicht zu trennen sind, genitaliter dagegen leicht auseinandergehalten werden können. Aus diesem Grunde ist bei Be-

stimmungen von allen Arten dieser Gattung unter allen Umständen eine (zu notwendig und die Wiedergabe bildlicher Darstellungen der Falter selbst nicht ausreichend. Deshalb wurde auf die Anfertigung von Zeichnungen dieser neuen Arten verzichtet und nur der Genitalapparat dargestellt.

***Eromene keredjella* spec. nov.**

Vfgl. mit grader Binde hinter der Mitte und 7 schwarzen Saumpunkten. Grundfarbe fast weiss, Hfgl. ebenso.

Die Art ist durch die Stellung der Mittelbinde gut charakterisiert. Diese steht bei  $\frac{3}{4}$  Irand und steigt senkrecht zum Costalrand auf, auf dem sie spitzwinklig mündet. Sie ist mattgelb, bräunlich eingefasst, ganz gleichmässig breit, glattrandig, nur unmittelbar vor der Costa ein ganz klein wenig nach aussen abgebogen und hier etwas schmaler. Die bräunliche Einfassung zeigt wie die ganze Flügelfläche ein sehr mattes goldenes Schimmern. Die weisse innere Begleitbinde reicht nur vom Irand bis zu der Stelle, wo die gelbe Binde den leichten Knick nach aussen macht. Die Grundfarbe ist fast weiss, die dunklen Schuppen sind im Basalfeld sehr sparsam verstreut (die Costa an der Wurzel etwas verdunkelt), im hinteren Feld dichter, mit Ausnahme des Raumes an der Costa. Die Doppelbinde ist bei dieser Art nur vor den Saumpunkten deutlich, oberhalb davon verliert sie sich und ist erst wieder als Apikalstrich sichtbar. Die 7 Saumpunkte stehen nicht auf gelber Grundfarbe, sondern wie bei *superbella* auf weisslichem der sonstigen Grundfarbe. Der mattgelb ausgefüllte Apikalstrich hinter dem oberen Schenkel der Doppelbinde ist bräunlich gerandet, ebenso ist ein breiterer Apikalstrich unmittelbar vor der Spitze braun. Das Apikalfeld selbst ist nicht ockerfarben, sondern von der weisslichen Grundfarbe. Der Saum oberhalb der schwarzen Punkte ist von der Farbe der Mittelbinde und auswärts, also an der Basis der Fransen, wie bei *superbella* mit silbernen Schuppen fein gesäumt. Die Fransen sind wie die Grundfarbe weisslich mit wenigen dunkleren Schuppen gemischt. Hfgl. gleichmässig weisslich, der Rand ganz schwach, aber deutlich, vom Apex bis zum Innenwinkel schwächer werdend, bräunlich. Fransen weisslich mit rein weisser Basallinie.

Useite der Vfgl. hell-graugelblich, Irand weisslich, Saum mit deutlich durchscheinenden schwarzen Punkten (hier nur 6!) der Saum selbst weisslich bis zur Spitze, nur oberhalb der schwarzen Punkte bräunlich gerandet.

Costa der Hfgl. wie die Vfgl., der sonstige Hfgl. weiss, der Saum wie auf der Oseite zart bräunlich bis zum Innenwinkel gerandet. Fransen wie oberseits.

Palpen hellbräunlich, doppelt so lang wie der Augendurchmesser. I. Glied unten weisslich, Maxillarpalpen bräunlich, am Ende oben weisslich. Stirn weisslichgrau, Schulterdecken etwas heller als der gelbbraunliche Thorax. Abdomen wie die Schulterdecken gefärbt. Die Behaarung hinter dem oberen Augenrand bräunlich-rostfarben.

Genitalapparat des Männchens (Taf. I, fig. 1): Valven sehr schmal und lang, oberer Rand spitz gegen den Aussenrand gewinkelt. Sacculus kurz, nur bis zur Hälfte der ganzen Valve reichend. Aedeagus breit, plump, obere Cornuti spechtartig, untere stabförmig. Gnathos in der Mitte etwas verengt, ebenso lang wie der Uncus. Dieser gleichmässig breit bis zum Ende, abgerundet.

Fundort : Keredj, 4.6.

Die Art steht *superbella* am nächsten, ist aber deutlich unterschieden durch die spitzwinklig auf dem Vrand aufstossende mattgelbe Mittelbinde und ohne ockergelbe Flügelspitze. Auch der ganz schwache Goldglanz auf der gesamten Flügelfläche ist sehr charakteristisch für die neue Art.

#### **Eromene pulverosa Chr.**

(Taf. I, fig. 2)

Es liegt ein Männchen von Keredj vor, das durch den Besitz von 8 schwarzen Saumpunkten und die fast ganz grade Mittelbinde so weitgehend mit der Originalbeschreibung der *pulverosa* (*Mém. Rom.*, III, p. 48, Taf. 2, fig. 14) übereinstimmt, dass ich es für diese Art ansehen möchte. Auch hat es den kleinen rostfarbenen Fleck hinter den Augen, auf den in der Beschreibung ausdrücklich hingewiesen wird. Nicht ganz übereinstimmend ist dagegen die Stellung der Mittelbinde. Diese soll bei *pulverosa* genau in der Mitte sein, während sie bei dem mir vorliegenden Männchen zwar genau an der Mitte des Vrandes anfängt, aber den Irand bei 2/3 erreicht. Trotzdem möchte ich das Stück zu *pulverosa* stellen, da Christoph möglicherweise sich hier nur ungenau ausgedrückt hat. Sollte sich später bei einer Untersuchung der Type von *pulverosa* herausstellen, dass diese doch eine andere Art ist, so schlage ich für die persische Art wegen des auffällig gebildeten, löffelförmigen Gnathos den Namen *cochlearella* vor.

Der Genitalapparat des Männchen ist sehr auffallend durch die breite in spitzwinklige Ecken ausgezogene Basis des Uncus und die löffelförmige Gestalt des Gnathos. Die Valven sind sehr geschwungen, der Haken an der Basis des oberen Valvenrandes sehr lang und spitz. Der Aedeagus ist in der unteren Mitte verengt, an der Basis wieder verbreitert, abgerundet. Der obere Sacculus-Rand ist schön geschwungen, ebenso wie die Valven.

Der Anellus ist auch sehr differenziert, oben tief geteilt, sodass er zweilappig erscheint. Der ganze Genitalapparat ist der komplizierteste innerhalb der bisher untersuchten der Gattung.

***Eromene islamella spec. nov.***

(Taf. I, fig. 3)

*Spw. 14-20 mm. Costa grade, Vfgl. heller oder dunkler grau bis bräunlich, Mittelbinde grade, ein grosser unbestimmter Fleck im hinteren Feld, 9 schwarze Saumpunkte. Fransenbasis darüber silbern.*

Eine in Grösse und Farbe auffallend veränderliche Art. Das basale ebenso wie das hintere Feld ist heller oder dunkler grau bestäubt. Die der inneren Seite ist am Irand deutlich breiter als nach oben, in der inneren Seite breiter ist als auf der äusseren. Die weisse Begleitbinde auf der inneren Seite ist am Imrand deutlich breiter als nach oben, in der Mitte des Flügels zweimal wellenförmig ausgebuchtet, nach der Costa zu fast ganz verschwindend. Vor dieser wellenförmigen Ausbuchtung ist das Basalfeld stets am dunkelsten und lichtet sich nach der Wurzel zu auf. Die Mittelbinde steht genau auf der Mitte der Costa, etwas spitzwinklig und läuft zu 2/3 des Irandes. Sie ist an der Costa unmerklich schmaler als am Irand, bei manchen Stücken durch dunkle Schuppen sehr verdüstert, sodass das Gelb kaum sichtbar ist. Hinter ihr ist der Raum zunächst ohne dunkle Schuppen. Diese häufen sich dann in der oberen Hälfte des hinteren Feldes zu einem unbestimmt begrenzten grossen, ziemlich runden Fleck, in welchem sich fast schwarze Schuppen zu strichartigen Bildungen vereinigen können. Zwischem diesem Fleck und dem unteren Teil der Doppellinie ist der Raum meist wieder erheblich heller. Die innere Linie ist breiter als die äussere der Doppellinie, sie ist fast rechtwinklig gebrochen. Die 9 schwarzen Punkte in der Anordnung 2, 3, 2, 2 von unten nach oben, wobei der erste Fleck am Irand manchmal sehr klein sein kann. Von den 3 zusammengehörigen Punkten ist der mittelste der dickste. Oberhalb der 9 Punkte setzt sich deren silberne äussere Einfassung als schmale silberne Saumlinie fort, ist einmal allerdings unterbrochen und erreicht die Spitze nicht ganz, sodass der Eindruck von 2 kurzen Silberstricheln entsteht. Der Saumteil davor ist von der Farbe der Mittelbinde, bei düsteren, dunklen Stücken daher sehr dunkel, kaum gelblich. Der Raum davor ist heller mit dunkleren Costalfleck und schliesslich folgt als äussere Begrenzung des oberen Teiles der Doppellinie ein kräftiger an der Costa etwas breiterer, bräunlich eingefasster Querstreifen von der Farbe der Mittelbinde, der auf den gelben Teil des Saums stösst. Alle diese Zeichnungen können sehr scharf und deutlich und auch sehr verschwommen sein.



Die Hfgl. sind mehr oder weniger weisslich, längs des Saumes und der Adern dunkler, vor dem Rand ein heller Querstreifen, der sich am Iwinkel verliert. Fransen an der Spitze grau, sonst weiss. Basallinie schneeweiss.

Useite des Vfgl. grau mit Aufhellungen zwischen den Adern. Die Doppellinie und die Zeichnungen auswärts von ihr schimmern schwach durch, von den Saumpunkten ist nur der 3. von unten kräftiger, alle anderen ganz matt angedeutet. Fransen wie auf der Oseite mit Basallinie und noch 2 Teilungslinien.

Useite der Hfgl. heller, mit deutlicher hellerer Randbinde vor dem dunkleren Saum. Fransen wie oberseits.

Palpen doppelt so lang wie der Augendurchmesser an der Spitze am dunkelsten. Thorax, Schulterdecken und Halskragen wie die Vfgl. gefärbt, Abdomen etwas heller, seidig glänzend, Bauchseite hellgrau.

Genitalapparat des Männchen: Valven mit breitem Sacculus, Spitze halb so lang wie der obere Teil der Valve. Diese am oberen Rand sanft geschwungen, an der Basis mit stark gebogenem Haken. Uncus schmal, von  $\frac{3}{4}$  ab zugespitzt. Gnathos in der Mitte ganz schwach verengt, ebenfalls schmal. Aedeagus breit und plump mit 3 Cornuti von ganz unterschiedlicher Gestalt. Oberer Anellusrand eingebuchtet, Vinculum abgerundet.

Fundort: Tchourum 17.3.1937 (GU 319). Ausserdem liegt mir diese aus der Ausbeute E.P. Wiltshire vor von Bagdad 3.4; 5.5; 10.5.37 (GU 323, 324, 325-327). Ferner stelle ich ohne GU als sicher hierher gehörig dazu mehrere Weibchen aus Bagdad vom April-Mai 37 sowie aus Ahwaz 6.4.38 und Qaraghan 13.3.37 (Irak).

Die Art gehört genitaliter in die nächste Verwandtschaft von *joiceyella* Schmidt, *bahrlutella* Ams. und *cambridgei* Z., ist aber von allen diesen so deutlich verschieden, dass keine Verwechslungsmöglichkeit besteht. Der Zeichnung nach gehört sie in die Gruppe mit 9 Saumpunkten und steht *zonella* Z. am nächsten. Bei *zonella* steht aber die Mittelbinde vor der Flügelmitte und ihre weissliche Begleitbinde ist überall gleichmässig dünn, während sie bei *islamella* am Irand deutlich breiter ist. *Zonella* wurde nach einem Weibchen beschrieben aus der Gegend von Palermo.

#### ***Eromene bahrlutella* spec. nov.**

(Taf. I, fig. 4)

Spw. 16-19 mm. Vfgl. Bräunlich mit grader Mittelbinde und 6 schwarzen Saumpunkten.

Die Beschreibung dieser neuen Art füge ich hier ein, obwohl sie nicht aus Persien und der Ausbeute Brandt stammt da im Anschluss an diese

Beschreibung eine Anzahl kritische Bemerkungen zu schon bekannten Arten gemacht werden sollen, die auch für die persischen Arten von Bedeutung sind

*Bahrlutella* stimmt in Grösse, Farbe und Zeichnung mit *joiceyella* Schmidt so weitgehend überein, dass nur durch GU eine Unterscheidung möglich ist. *Joiceyella* Schm. (*Ann. Mag. Nat. Hist.*, XIV, p. 538, T. 17, Pl. 4, 1934), die aus Marokko beschrieben wurde, liegt mir in 2 Männchen aus Sardinien vor, die ich für sichere Exemplare der *joiceyella* halten muss, da sie in allen Einzelheiten mit der guten Beschreibung und der ebenfalls guten Abbildung übereinstimmen. Nach diesen Stücken zu urteilen hat *joiceyella* (GU 315) (Taf. I, fig. 5) an der Basis des oberen Valvenrandes einen Höcker, der spitz und scharf ausläuft, während bei *bahrlutella* dieser Höcker abgestumpft ist, ausserdem ist der Uncus länger und stärker nach dem Ende zu verjüngt, der Aedeagus länger mit einer sehr auffälligen am oberen Rande gezähnten hakenförmigen Chitinplatte, während bei *joiceyella* hier nur eine aufgerauhte Chitinleiste vorhanden ist. Es kann freilich sein, dass dieser Unterschied auf verschiedener Lagerung des Aedeagus beruht. Dies kann erst entschieden werden, wenn mehr Material vorhanden sein wird. Das Vinculum ist abgerundeter, der Winkel zwischen oberer und äusserer Valvenbegrenzung spitzer, der Aussenrand der Valve daher schräger. Der entscheidende und sofort in die Augen fallende Unterschied ist jedenfalls der abgerundete Höcker an der oberen Valvenkante.

Fundort : Südende des Toten Meeres 15.-27.3.1933, leg. Aigner.  
Typen : 1 Männchen, 1 Weibchen.

Cotype : 1 Männchen (GU 326), Ahwaz (Irak), 7.10.38, leg. E.P. Wiltshire.

Ich benutze diese Gelegenheit, um noch einige Bemerkungen über diese und andere *Eromene*-Arten zu machen, die meiner Ansicht nach falsch gedeutet worden sind. So schreibt Zerny in seiner ausgezeichneten Fauna des Grossen Atlas (*Mém. Soc. Sc. Nat. Maroc*, 1935, p. 110) dass *joiceyella* Schm. zweifellos mit *ramburiella* Dup. identisch sei. Diese Auffassung Zerny's kann ich nur als irrig bezeichnen. *Ramburiella*, die aus Corsica beschrieben wurde, ist nach der Originalbeschreibung Duponchel's vor allem durch einen goldgekernten Fleck im Raum hinter der Mittelbinde gekennzeichnet. Ausserdem gehört sie zur Gruppe mit 9 schwarzen Saumpunkten, was zwar nicht ausdrücklich aus der Beschreibung hervorgeht, was aber indirekt aus den ausführlichen und sehr wertvollen Zeller'schen Angaben in der "Isis" 1847 gelegentlich der dort auf p. 759 gemachten Ausführungen über die Unterschiede zwischen *ramburiella* und *bella* geschlossen werden muss. Unter den hier aufgeführten 4 Unterschieden dieser

beiden Arten wird nichts gesagt, dass *ramburiella* weniger Saumpunkte hat als *bella*, und da *bella* deren 9 besitzt, muss gefolgert werden, dass auch *ramburiella* 9 Saumpunkte hat. Aber auch unabhängig von der Zahl der Saumpunkte kann *ramburiella* wegen des goldgekernten Fleckes hinter der Mittelbinde niemals mit *joiceyella* identisch sein. Viel eher wäre es möglich, dass *joiceyella* mit *vinculella* Z. (*Isis*, 1847, p. 760) zusammenfiele, die aus Sizilien beschrieben wurde und im Rebel'schen Katalog von 1901 nach meiner Auffassung irrtümlich als blosse Varietät von *ramburiella* aufgeführt ist. Dass *vinculella* eine bona species sein muss, geht schon daraus hervor, dass diese Art nur 6 schwarze Saumpunkte besitzt und keinen goldgekernten Fleck hinter der Mittelbinde hat. Dass sie auch mit *joiceyella* nicht zusammenfallen kann, geht daraus hervor, dass Zeller die Vfgl. als "staubgrau mit lilafarbenem Anflug" bezeichnet. Auch werden die Hfgl. als "weisslich, gegen die bräunliche Randlinie dunkler werdend" bezeichnet, während *joiceyella* "uniform bright brownish grey" Hfgl. besitzt, was auch auf die sardischen Stücke vollkommen zutrifft. Zeller schreibt weiter, dass seine *vinculella* "unterseits hellstaubgraue Vfgl. mit einem Vrand, der bis über die Hälfte bleichgelblich ist, besitzt, und dass die Hfgl. unterseits weisslich sind mit deutlicher Spur der Querlinie vor dem Hrande." Bei meinen sardischen *joiceyella* sind stattdessen die Useiten beider Flügelpaare vollkommen gleichmässig gelbgrau, es besteht also kein Gegensatz zwischen den weisslichen Hfgl. und den staubgrauen Vfgl. der *vinculella* und die Costa der Vfgl. ist nicht bis über die Hälfte bleichgelb, sondern nur vor der Spitze zeigt sich eine gelbliche costale Aufhellung.

Demnach kann ich *vinculella* wie auch *joiceyella* nur als bona species ansprechen, eine Auffassung, in der ich umso mehr bestärkt werde, als selbst äusserlich nicht trennbare Arten wie *bahrutella* und *joiceyella* genitaliter deutlich verschieden sind. Möglich ist dagegen, dass die von mir zu *joiceyella* gezogenen sardischen Stücke trotz ihrer vollkommenen äusserlichen Uebereinstimmung dennoch zu einer eigenen Art gehören. Da sie indessen aus dem westmediterranen Raum stammen, aus dem auch *joiceyella* beschrieben wurde, so ist dies nicht allzu wahrscheinlich.

Ebenfalls kann ich dem Rebel'schen Katalog von 1901 nicht darin folgen, dass hier *zonella* Z. (*Isis*, 1847, p. 758) mit *ramburiella* synonymisiert wird. *Zonella* hat nach Zeller im Feld hinter der Mittelbinde oben einen hellockergelben, dunkel eingefassten Fleck, während bei *ramburiella* dieser Fleck goldgekernt ist. *Zonella* muss daher als bona species angesehen werden.

Auch *funiculella* Ev. ist sicher eine gute Art und keine Varietät oder Subspecies von *ramburiella*.

Irrtümlich ist ebenfalls die Zerny'sche Auffassung (Z. Oesterr. Ent., V, 24, p. 132, 1939) wonach *pulverosa* Chr. mit *ramburiella* zusammenfalle. Die Beschreibung der *pulverosa* in Mem. Rom., III, p. 48, hebt ausdrücklich hervor, dass 8 Saumpunkte vorhanden sind und erwähnt nichts von einem goldgekernten Fleck hinter der Mittelbinde.

Falsch ist ferner die Darstellung der angeblich echten *ramburiella* wie Graf Hartig (Mem. Soc. Ent. Ital., XVII, T. III, Fig. 3, 1938) sie abbildet. Das dort abgebildete Tier hat weder einen goldgekernten Fleck hinter der Mittelbinde noch auch 9 Saumpunkte, sondern nur deren 4. Es darf vermutet werden, dass die Zahl der Saumpunkte nicht korrekt wiedergegeben ist, denn eine *Eromene*-Art mit nur 4 Saumpunkten ist bisher ganz unbekannt. Wahrscheinlich dürfte es sich hier um *joiceyella* handeln, bei der die Zahl der Saumpunkte falsch dargestellt ist.

Zweifelhaft ist ferner, ob *jazartella* Ersch. und *cambridgei* Z. zusammenfallen, wie dies Caradja (Iris, 1910, p. 116) tut. Die Originalbeschreibung der *jazartella* ist nicht ausreichend, um diese Frage zu entscheiden. Ich gebe daher zur Klärung dieses Problems eine Darstellung des Genitalapparates der mir als *cambridgei* Z. vorliegenden Art (Taf. I, fig. 6) vom Süden des Toten Meeres.

Nach der vorliegenden Untersuchung komme ich zu dem Ergebnis, dass alle bisherigen Angaben über die Verbreitung der *Eromene*-Arten überprüft werden müssen. Eine einwandfreie Fundortsangabe ist in dieser schwierigen Gattung nur durch eine GU möglich. Für die palästinensische Fauna ist z.B. das Vorkommen von *ramburiella*, *superbella* und *pulverosa* vorläufig zu streichen. Sicher nachgewiesen ist von dort bisher nur *bahr-lutella*, *ocellea* und *bella*. *Cambridgei* kann nur als sehr wahrscheinlich vorkommend angesehen werden.

#### ***Talis iranica* spec. nov.**

(Taf. I, fig. 7)

*Spw.* 36 mm. *Vfgl.* fast zeichnungslos sandfarben, hell bräunlich mit hellem Costalhäkchen als letztem Rest der fehlenden äusseren Querbinde bei 4/5 und einigen dunkleren Schuppen im Bereich des Irandes und des Zellschlusses. *Hfgl.* einschliesslich der Fransen sehr hell, fast weiss. Heliob cremefarben, seidenglänzend, 1. Abdominalsegment nicht aufgeheilt. Gehört in die quercella-Verwandschaft.

Die Art macht den Eindruck einer grossen, blassen, zeichnungslosen *quercella*, ist von ihr aber durch die sehr hellen *Hfgl.*, die bedeutendere Grösse und die viel helleren, fast zeichnungslosen *Vfgl.* sowie durch die Unterschiede des männlichen Genitalapparates spezifisch verschieden.

Die im Vergleich zu *arenella* Rag. und *quercella* Schiff. viel helleren Vfgl. sind fast zeichnungslos. Lediglich ein schwacher heller Costalfleck bei  $4/5$  ist sichtbar, sowie einige unbedeutende Verdunkelungen am Zellende und Irand. Fransen wie die Vfgl. Hfgl. gleichmässig sehr hell samt Fransen. Palpen und Nebenpalpen zeichnungslos, von der Vfgl.-Farbe. Fühler wie bei *quercella*, also unterseits mit 2 Reihen ziemlich langer Wimperbüschel.

Unterseits sind die Vfgl. nicht ganz so hell wie die rein weissen Hfgl., die ober- wie unterseits ganz gleich sind.

Im Genitalapparat steht die Art *quercella* sehr nahe. Bei Ventralansicht sind als Hauptunterschiede die bei *iranica* viel länger und spitzer ausgezogenen Sacculi hervorzuheben, die bei *iranica* die ventrale Valvenseite deutlich überragen. Die Spitze ragt über den Valvenrand etwa ebenso weit hinaus, wie der Innenteil lang ist. Bei *quercella* (Taf. I, fig. 8) überragt die Sacculus-Spitze nur grade eben den Valvenrand und ist stumpfer. Der noch wichtigere Unterschied liegt aber im verschiedenen Bau des Cornutus. Dieser ist bei *quercella* ein gleichmässig stark chitinisiertes Gebilde, das in der Mitte stark verbreitert und eckig ist, während der Cornutus bei *iranica* stabförmig und gleichmässig und ohne Verbreiterung der Mitte ist.

Fundort : Keredj, Elburs-Gebirge 6.9.

#### **Talis occidentalis spec. nov.**

(Taf. I, fig. 9)

Spw. 30 mm. Der *quercella* Schiff. so nahe, dass die Angabe der Unterschiede zur Charakterisierung genügt.

Grösser, etwas breitflüglicher, daher der Saum eine Kleinigkeit steiler. Vfgl.-Grundfarbe viel heller, aber nicht so hell wie bei *iranica* Ams. Zeichnungen bleicher und viel weniger von der Grundfarbe abgehoben. Die dunkle Mittelbinde steht senkrecht auf dem Irand, bei *quercella* verläuft sie etwas schräg. Hfgl. viel heller, die Fransen weiss. Useite beider Flügelpaare ebenfalls viel heller.

Die Art macht ganz den Eindruck einer helleren, verloscheneren Unterart von *quercella*. Der Genitalapparat zeigt aber einige spezifische Unterschiede (Taf. I, fig. 9a).

Die Sacculi, die bei *quercella* den Valvenrand überragen, überragen diesen bei *occidentalis* nicht. Der Cornutus, der bei *quercella* im unteren Teil stark verbreitert ist und eckig, ist bei *occidentalis* zwar auch verbreitert, aber nicht eckig und nach vorne zu viel schlanker. Der Uncus, bei *quercella* ganz parallelrandig, ist bei *occidentalis* nach der Basis leicht verschmälert.



Mit der von Caradja beschriebenen *quercella* v. *pallidella* (Iris, 1916, p. 5) kann *occidentalis* nichts zu tun haben, da Caradja diese aus Kuld-scha beschriebene Unterart charakterisiert "als gross, mit weisslicher Grundfarbe der Vfgl. und ganz bleiche Hfgl." Von weisslicher Grundfarbe der Vfgl. kann aber bei *occidentalis* keine Rede sein, ausserdem ist die Art nur wenig grösser als *quercella*.

Fundort: Alger, Hassi-Babah, ohne Datum. Die Type in meiner Sammlung. Die Beschreibung dieser neuen Art an dieser Stelle, erfolgt, weil ihre Entdeckung gelegentlich der Untersuchung von *Talis*-Material zwecks Bestimmung der *iranica* sich ergab.

Bei dieser Gelegenheit bemerke ich, dass Filipjev und Djakonov in ihrer verdienstvollen Studie über die Gattung *Talis* (Ann. Mus. Zool. Acad. Sc. Russ., 1924, pp. 143-151) eine Bestimmungstabelle der paläarktischen *Talis*-Arten bringen, wobei nach der unterschiedlichen Fühler-Bewimperung die *Talis*-Arten eingeteilt werden in:

1. Fühler des Männchen sägezählig oder borstenförmig und schwach gewimpert.
2. Fühler des Männchen einseitig sägezählig.

Unter Gruppe I wird nun merkwürdigerweise auch *arenella* Rag. gestellt, die aber nach mir vorliegenden, vom Zerny bestimmten Stücken, ganz eindeutig kammzähnlige Fühler hat, soweit sie in der genannten Arbeit von *T. dilatata* Chr. auf Taf. IV, fig. 5, abgebildet werden. Auch Ragonot schreibt in der Originalbeschreibung u.a. "Antennes longuement et fortement pectinées sur un rang". Durch diese einseitig kammzähnligen Fühler ist *arenella* sehr leicht von der sonst ziemlich ähnlichen *quercella* zu unterscheiden. Auch im Genitalapparat sind beide Arten ganz verschieden.

#### **Anaeglis argentalis Chr.**

(Taf. II figs. 10, 10a, u. 10b)

Diese prachtvolle Art, die Christoph nach einem einzigen Männchen aus Kisil-Arwat (Transcaspien) beschrieben hat, ist seitdem nicht wieder aufgefunden worden. Es blieb auch die systematische Stellung der Art, die Christoph nur mit ? zur Gattung *Anaeglis* Led. zog, noch ungeklärt. Rebel stellte sie im Katalog von 1901 aus mir unbekannten Gründen zu *Cirrhochrista* Led.

Nachdem jetzt die Möglichkeit bestand, ein aus dem Elburs-Gebirge stammendes Männchen (bei Keredj gefangen) genau zu untersuchen, können folgende Ergebnisse mitgeteilt werden: Die von Lederer für die brasilianische Art *demissalis* Led. aufgestellte Gattung *Anaeglis* kommt für *argen-*

*talis* nicht in Frage, da sowohl das Geäder des Vfgl. wie auch das des Hfgl. abweicht. Bei *Anaeglis* sind u. a. im Vfgl. m2 und m3 (5 und 4) gestielt und kommen aus dem unteren Winkel der Mittelzelle. Bei *argentalis* sind m2 und m3 deutlich getrennt. Auf dem Hfgl. bei *Anaeglis* m2 auf langem Stiele mit m3, bei *argentalis* sind m2 und m3 (5 und 4) deutlich getrennt. *Anaeglis* ist also schon des Geäders wegen für *argentalis* nicht passend. Aber auch *Cirrhochrista*, die im Rebel'schen Katalog unter die *Schoenobiinae* eingereiht ist, wiewohl sie zweifellos eine echte Pyraustinen-Gattung, kommt für *argentalis* nicht in Frage. *Cirrhochrista* hat u. a. auf den Hfgl. Rippe 8 (sc + rl) nur als ganz kurzen Ast in den Vrand auslaufend, während *argentalis* eine normal entwickelte sc hat die als langer Ast in den Vrand ausläuft. Auch hat *Cirrhochrista* eine zwar schwach entwickelte, aber deutlich vorhandene Zunge, während bei *argentalis* die Zunge ganz fehlt. Es ergibt sich daher die Notwendigkeit für *argentalis* ein neues Genus aufzustellen, für das ich den Namen *Aeglotis* gen. nov. einführe und wie folgt charakterisiere :

Palpen lang, schnabelförmig, nach vorn schräg herabhängend, anliegend beschuppt, letztes Glied kurz. Nebenpalpen sehr kräftig, abstehend. Fühler mit verdicktem Basalglied, ziemlich kurz, höchstens 2/3 der Vfgl.-Länge erreichend. Unterseits mit einer Reihe von Lamellen, die an ihrer Basis schmal, nach ihrem Ende zu verbreitert sind. Die breite Endfläche der Lamellen stark eingebuchtet, an jedem Glied eine Lamelle von der Breite des Fühlergliedes. Die einzelne Lamelle an den Rändern ganz fein behaart. Stirn ohne Auszeichnung, Rüssel fehlend. Ein Kielhäutchen zwischen den beiden Gehörbläschen am Grunde des Hleibes.

Vfgl. mit grader Costa, abgerundeter Spitze, Saum leicht gebogen Vfgl. und Hfgl. ziemlich breit.

Vfgl.-Geäder : sc auf der Höhe des Zellrandes in den Saum. R1 und r2 frei, r3 und r4 lang gestielt. R5 fast aus einem Punkt mit dem gemeinsamen Stiel von r4 + r3 aus der oberen Zellecke. M1 sehr nahe bei r5 entspringend. m2 weit von m1, dicht bei m3.

Hfgl.-Geäder : sc ziemlich stark geschwungen. Der in das Ende des Vrandes auslaufende Ast der sc mit rr fast aus einem Punkt, m2, m3 und cu1 sehr dicht beieinander.

Genitalapparat des Männchens : Gnathos fehlend, Uncus kräftige, gleichmässig nach vorne verschmälert, Valven ohne besondere Auszeichnungen, Aedeagus ein schwach gebogenes, kräftiges Rohr darstellend, ein irgendwie entwickeltes Vinculum fehlt.

Aus allen diesen Befunden ergibt sich, dass *Aeglotis* sehr isoliert unter den paläarktischen Gattungen steht, wie dies auch dem ganz auffallenden

Zeichnungsprinzip der *argentalis*, das durchaus aus dem Rahmen der übrigen Zeichnungen fällt, entspricht. Selbst die Unterbringung der Gattung *Aeglotis* bei den einzelnen Unterfamilien der *Pyalidae* muss noch offen bleiben, solange eine umfassende Revision der Familie aussteht. Charakteristisch für die Gattung ist jedenfalls die frei entspringende r5 im Vfgl. (weswegen die Subfamilien der *Pyalinae*, *Endotrichinae* und *Epipaschiinae* entsprechend der Hampson'schen Klassifizierung nicht in Frange kommen), im Hfgl. das Fehlen eines Haarkammes auf der Basis der cu2 (weswegen *Galleriinae*, *Crambinae*, *Anerastiinae* und *Phycitinae* ausfallen) das Fehlen eines Rüssels (weswegen die *Pyraustinae* nicht in Frage kommen), sodass nur die Subfamilie der *Schoenobiinae* übrig bleibt. Die schwach oder ganz unberüsselten Vertreter dieser Unterfamilie passen jedoch im Habitus keineswegs zu *Aeglotis*, im Geäder kommen sie, besonders *Schoenobius*, *Aeglotis* nahe. Es wird daher am besten sein, die neue Gattung zu den *Schoenobiinae* zu zählen, obwohl man auch die Auffassung vertreten könnte, dass es sich hier um eine unberüsselte *Pyraustine* handelt. Es sei noch bemerkt, dass Börner in seinem Tribus *Pyraustini* die Gattungen der *Schoenobiinae* und *Pyraustinae* gemeinsam unterbringt, da beide im Besitz des Kielhäutchens zwischen den Gehörblasen sind und ohne Haarkamm des Cubitus der Hfgl.

***Actenia persica* spec. nov.**

(Taf. II, figs. 11 u. 11a)

Spw. 24 mm. Vfgl. gleichmässig holzfarben-braun mit schwarzbraunem, den Vrand nicht erreichenden Querbalken bei  $1/4$  und leicht geschwungener, dunklerer Querlinien bei  $3/4$  und Zellschlusspunkt. Gehört in die *brunnealis-honestalis*-Verwandtschaft.

Die Vfgl. sind heller als bei typischen *brunnealis*-Stücken, sehr gleichmässig holzfarben-braun, ohne gelbliche oder rötliche Töne und sehr stark entwickeltem, breiten, dunklen Querbalken bei  $1/4$ . Dieser steht senkrecht auf dem Irand und hört bei der unteren Zellbegrenzungsader auf. Er ist nach innen zu scharf begrenzt, nach aussen weniger. Bei *brunnealis*, dort als Binde auftretend und der Flügelwurzel deutlich näher, verläuft die Binde mit leichtem Knick bis zur Costa, auf der sie auch senkrecht steht; bei *persica* würde der Querbalken, bis zur Costa verlängert gedacht, diese in etwas spitzem Winkel berühren. Der Zellschlusspunkt ist sehr klein, viel kleiner als bei *brunnealis*. Die äussere Querbinde wie bei *brunnealis*, aber nicht bei  $4/5$ , sondern bei  $3/4$ , also vom Aussenrande entfernt. Der Abstand zwischen Querbalken und Querbinden ist also geringer als der entsprechende bei *brunnealis* und *honestalis*. Die ungefähr wie bei *brunnealis* verlaufende äussere Binde wird nach aussen von einer hellen schmalen, besonders an

der Costa deutlichen Querbinde begleitet Ihr folgt ein kaum sichtbares Band rostbrauner Schuppen. Die bei *brunnealis* so scharf markierten hellen und dunklen Costalflecken bis zur äusseren Querbinde, sind bei *persica* ganz schwach angedeutet, ebenso fehlen Saumpunkte fast ganz. Die Fransen von der Vfgl.-Grundfarbe, ohne Teilungslinie. Hfgl. mit ganz schwachem hellen Querschatten in der Mitte, sonst zeichnungslos. Kopf, Thorax, Abdomen, Beine und Palpen zeichnungslos holzfarben. Die Fühler sind etwas länger und feiner bewimpert als bei *brunnealis* und *honestalis*. Unterseits ist nur die äussere Binde, die aber hier den Rand nicht erreicht, ausgezeichnet. Costa von der Querbinde bis zum Apex etwas aufgeheilt.

Genitalapparat des Männchens (GU 288) : Im Vergleich zu *brunnealis* und *honestalis* (Taf. II, figs. 12 u. 13) ist die Art durch einen sehr langen Aedeagus ausgezeichnet, der bei *honestalis* ohne Cornuti ist, während sich bei *persica* ein sehr kräftiger Cornutus, in der Mitte des Aedeagus liegend, findet. Bei *brunnealis* liegt er an der Spitze und ist ganz anders, nicht spitz geformt. Wesentliche Unterschiede zeigt auch die schwach chitinisierte Platte, die mit dem vorderen Teil des Aedeagus verbunden ist. Diese ist bei *brunnealis* tief eingebuchtet, bei *honestalis* etwas, bei *persica* garnicht eingebuchtet. Uncus und Vinculum zeigen weniger wichtige Unterschiede.

*Persica* ist durch die gleichmässig holzfarbenen Vfgl., den sehr kräftigen Querbalken bei 1/4 und die deutlich weiter vom Aussenrande verlaufende Querbinde unverkennbar. *Byzacaenicalis* Rag. ist viel kleiner (20 mm.) und hat viel hellere, mit den Vfgl. stark kontrastierende Hfgl. *Honestalis* hat einen leicht rötlichen Ton, *beatialis* Klehbg. ist leicht ockergelb, die dunkle Querbinde viel prägnanter Mit *gradalis* Zy., *grandalis* Mab., *messivalis* Trti., *orbicentralis* Rbl. und *pallidalis* Trti. (letztere wahrscheinlich mit *byzacaenicalis* identisch !) und *vidualis* Chré. hat *persica* nichts zu tun.

Fundort : Comé, 2600 m., 15.8.1937.

#### ***Euclasta mirabilis* spec. nov.**

(Taf. II, fig. 14)

Spw. 25 mm. Vfgl. braun mit nach aussen etwas breiter werdender weisser Wurzelstrieme, die oben und unten schwarz eingefasst ist, auf der Querrippe einen schwarzen Punkt hat und sich gegen den Aussenrand verliert. Adern schwarz angelegt, mit scharf weissen Unterbrechungen. Hfgl. grau, nicht irisierend.

Die schöne Art steht *splendidalis* HS. ziemlich nahe, ist aber sofort durch die graubraunen, nicht irisierenden Hfgl. verschieden, wodurch sie übrigens auch von den asiatisch-indischen Arten *defanatialis* Wlk. und *fuligeralis* Led. zu unterscheiden ist. Auch sonst ist die Zeichnung von den genannten Arten abweichend.



Die Vfgl. sind braun, die Costa oberhalb der Querrippe hellgrau werdend. Die schwarze Begrenzung der rein weissen Wurzelstrieme ist oben und nach aussen zu breiter als unten. Die obere schwarze Einfassung macht kurz vor dem kleinen schwarzen Zellschlusspunkt eine schräge Biegung nach oben und verläuft dann auf Ader m1 zum Aussenrand. Die Adern r5, m1 bis cu2 und die Axillaris schwarz mit mehreren rein weissen Unterbrechungen. Der Irand selbst ganz fein schwarz und weiss gemischt. Vor 1/3 ein sehr schräger weisser Querwisch zur Axillaris. Die Wurzel am Irand etwas weiss aufgehellt. Saum fein und kontinuierlich schwarz, davor, etwas breiter, weiss. Fransen braun mit 3 Teilungslinien. Hfgl. gleichmässig grau-bräunlich, am Rande etwas dunkler, nicht durchscheinend oder gar irisierend. Fransen an der Basis von der Farbe der Flügel, dann weisslich. Kopf, Thorax und Schulterdecken braun wie die Vfgl., Abdomen wie die Hfgl. Palpen: 1: Glied und unterer Teil des 2. weisslich, oberer Teil des 2. und 3. braun. Die helle untere und die braune obere Partie scharf gegeneinander abgesetzt.

Useite beider Flügelpaare zeichnungslos, ein ganz kleiner Zellschlusspunkt auf den Vfgl. ist hell.

Genitalapparat des Männchens (Taf. II, fig. 14a): Uncus mit Reihen schwarzer, kurzer Borsten bzw. Haare dicht haubenartig besetzt (etwas an *Coleophora* erinnernd, wo die "Köpfe" des Uncus ähnlich sind!) Valven sehr schwach chitiniert, oberer Rand bis zur Mitte versteift. Aedeagus ziemlich gedrunken, Cornutus in der Mitte mit pfeilartigem langem Gebilde. Eine spangenartige Verbindung zwischen den beiden Valven am oberen Rande der Valven bei 1/4 befestigt (Sp. in der Zeichnung) Ein Büschel langer Haare sitzt auf einem kleinen Dreieck, das mit einem armartigen Chitinstück auf der dorsalen Seite der unteren Valven bzw. des Vinculums ansetzt.

Fundort: Bender Tschabahr, Dezember 1937.

*f. sinuata*  
Vgl. 34 + [30] *Euzophora* ~~*Myelois*~~ *lunulella formosella* Rbl.

2 mir vorliegende Exemplare einer der *Euzophora lunulella* Costa sehr ähnlichen Art aus Belutschistan und Fars stimmen mit der Abbildung und Beschreibung der *Myelois formosella* Rbl. (*Iris*, 24, p. 5, Taf. 1, Fig. 8, 1910) vollkommen überein, sodass an der Zugehörigkeit dieser Stücke zu dieser Art nicht gezweifelt werden kann. Dagegen veranlasste die systematische Stellung, die Rebel dieser Art gab, indem er sie in die Gattung *Myelois* stellte, eine genaue Nachuntersuchung. Dies umso mehr, als die grosse äussere Ähnlichkeit der Art mit *Euzophora lunulella* auf die auch Rebel hinweist, eher eine Unterbringung der Spezies bei *lunulella* hätte erwarten lassen. Es wurden daher 2 Stücke der *lunulella* aus Andalusien und ein Exemplar der *formosella* aus Belutschistan auf die männlichen Genitalien hin untersucht, wobei die überraschende Feststellung getroffen



werden konnte, dass *formosella* von *lunulella* artlich nicht getrennt werden kann, sondern nur subspezifisch verschieden ist. Der einzige greifbare Unterschied besteht in der Bildung der hufeisenförmigen Juxta: bei *formosella* sind die beiden Arme dieser Juxta erheblich schmaler und länger als bei *lunulella*, sonstige Unterschiede bestehen nicht. Da dieser Unterschied nur gradueller, nicht prinzipieller Natur ist, kann *formosella* nur als Unterart der *lunulella* aufgefasst werden. *Formosella* ist charakterisiert durch blässere, elfenbeinfarbene Vfgl., die deutlich schmaler sind als bei *lunulella*. Die Stärke der Zacken der Doppellinie schwankt erheblich, im allgemeinen ist sie geringer als bei *lunulella*. Der mond förmige Zellschlussfleck kann sehr klein punktförmig und sehr kräftig fleckartig sein, ebenso der Ansatz der äusseren Doppellinie an der Costa. Bei dem Stück aus Belutschistan ist er sehr deutlich markiert, sodass man den Eindruck von 2 scharf abgehobenen Costalfleckchen hat, bei dem Stück aus Fars dagegen genau wie bei *lunulella* unauffällig. Die Subspezies *formosella* variiert also erheblich, sie scheint sehr verbreitet zu sein. Ausser den von Rebel aufgeführten Originalstücken vom Inderskyschen Salzsee im Uralgebiet und den beiden mir vorliegenden Stücken aus Fars und Belutschistan habe ich noch Stücke aus der Kerbela-Wüste (Irak) der Coll. Wiltshire.

***Emprepes palealis* spec. nov.**

(Taf. II, fig. 15)

Spw. 20 mm. Vfgl. zeichnungslos hellgelb mit schwacher Verdunkelung am Zellende, ebenso Kopf, Thorax und Fransen hellgelb. Hfgl. hellgrau, am Rand leicht verdunkelt. Fransen mit schwacher Basallinie, am Ende heller.

Stirnbildung wie bei *pudicalis* Dup. und *chirazalis* Ams. Fühler deutlich gewinpert. Maxillarpalpen abstehend beschuppt. Labialpalpen gelblich, anliegend beschuppt.

Genitalapparat (GU 296) sehr ähnlich dem von *chirazalis* Ams., dorsaler Valvenrand nicht ausgebuchtet, Gnathos plumper.

Fundort: Comé 2600 m., 3.7.1937.

***Emprepes chirazalis* nov. spec.**

(Taf. II, fig. 16)

Spw. 20 mm. Die in der Grundfarbe hellgrauen Vfgl. mit dunkelgrauer Saumbinde und bis über die Flügelmitte hinausgehender ebenso dunkelgrauer Verdunkelung des Wurzelteiles. Fransen, ein feiner Strich an der Basis des Irandes und die Falte in ihrem basalen Teil hellgrau. Hfgl. dunkelgrau, Fransen hellgrau.

Als einzige scharfe Zeichnung tritt auf den in der Grundfarbe hellgrauen Vfgl. eine dunkelgraue Saumbinde auf, die am Apex schmal, nach dem Irand zu breiter wird. Sie ist auf ihrer Iseite ganz schwach rosa beschattet, nach den Fransen zu scharf begrenzt. Der ebenso dunkelgraue Wurzelteil des Flügels reicht am Irand bis fast zur Saumbinde, wo er nur einen ganz schmalen hellgrauen Raum frei lässt. Nach der Spitze zu verbreitert sich dieser hellgraue Raum und lässt hier deutlich ein hellgraues Feld zwischen Saumbinde und dunkelgrauem Wurzelteil frei. Dieses Dunkelgrau ist genau wie die Saumbinde ganz schwach Rosa übergossen, in der Zellmitte etwas aufgehellt. Ein ziemlich scharfer, sehr schmaler hellgrauer Streifen am Irand geht bis  $1/3$ , ein hellgrauer Faltenstreifen ist weniger deutlich. Die Costa ist anfangs wenig aufgehellt, nach der Spitze zu stärker. Die Hfgl. sind einfarbig grau, kaum heller als die Saumbinde der Vfgl. Fransen an der Basis grau, nach dem Ende weisslich. Unterseits sind die Vfgl. grau mit Zellschluss-Verdunkelung und aufgehellter Costa, die Hfgl. sehr hell.

Stirnbildung wie bei *pudicalis* Dup. Maxillarpalpen anliegend beschuppt, fadenförmig. Labialpalpen einfarbig chitinfarben. Fühler unterseits kurz bewimpert.

Genitalapparat von *pudicalis* stark abweichend, aber sehr ähnlich *palearis* Ams. Dorsaler Valvenrand stark geschwungen, an der Valvenwurzel ein kleiner, länglicher, fast unchitinisierter Fleck (GU 295).

Fundort: Chiraz, 1600 mm., 17.4.1937.

### **Lepidogma tamaricalis Mn.**

(Taf. III, figs. 17 u. 17 a)

Von dieser bisher nicht abgebildeten Art sei die Zeichnung des Vfgl. und des männlichen Genitalapparates gegeben. Von *obatralis* Chr., der die Art sehr ähnlich ist, unterscheidet sich *tamaricalis* übrigens durch den Besitz einer Zunge, die zwar klein, aber deutlich sichtbar ist. Die Fühler sind bei *tamaricalis* nicht kammzählig, wie sie es bei der mir in natura unbekannten *obatralis* sein sollen, sondern unterseits zweireihig mit feinen Wimperbüscheln besetzt, an jedem Glied 2 Paar Büschel, deren Länge von der doppelten Breite der Geissel ist.

Genitalapparat (GU 380) mit sehr grossem Uncus, der nach dem Ende zu verbreitert ist und löffelförmig gewölbt. Gnathos sehr zart. Valven mit spitzigem Zahn an der äusseren Ecke oben. Aedeagus lang und schmal, mit langem Cornutus, dessen oberer Teil an der inneren Seite ganz fein gesägt ist.

Die weit verbreitete Art ist bisher aus Palästina, Aegypten, Algerien und Mittelitalien bekannt.

Fundort: Bender Tchahbahar, Februar und Mai, 1938.

**Benderia nov. gen.**

Zunge und Stemmata fehlen. Palpen schräg nach vorne hängend, 1 1/2 mal so lang wie der Augendurchmesser, anliegend beschuppt, letztes Glied wenig abgesetzt, grade. Stirn glatt. Fühler des Männchens unterseits mit 2 Reihen kurzer Wimpern besetzt. Die einzelne Wimper nicht viel länger als der Fühlerschaft breit. Basalglied mit einem Höcker oben, darunter ein starker Schuppenwulst. Zwischen beiden ist der Fühlerschaft eingelenkt, dessen erstes Glied einen kleinen Auswuchs nach vorne trägt.

Vfgl. gestreckt, dreieckig, Saum wenig schräg, r4 + r5 ziemlich lang gestielt auf r3; m2 und m3 fast aus einem Punkt. Hfgl.: m3 und m2 dicht beieinander.

Genitalapparat des Männchens sehr auffallend durch den am Ende dreieckigen Gnathos, wie er sonst bei keiner Pyralidinen-Gattung bekannt ist. Aedeagus kurz, plump, an der Spitze mit scharfem Haken, dessen obere Kante gezähnt ist.

Die Gattung ist im Geäder mit *Dattinia* Rag. übereinstimmend, es fehlen ihr aber die Stemmata, die nach Ragonot (*Ann. Soc. Ent. Fr.*, 1891, p. 59) wenn auch "minuscules" vorhanden sind. Auch hat *Dattinia* eine Zunge, die freilich gleichfalls "minuscule cachée entre les palpes" ist. Dazu ist zu sagen, dass die Zunge bei den Arten der *proximalis*-Gruppe deutlich und keineswegs klein ist, während sie bei den Arten der *poliopastalis*-Gruppe tatsächlich "minuscule" ist. Diese Gruppe fällt aber überhaupt durch den sehr auffälligen Aedeagus aus dem übrigen Rahmen der sonstigen *Dattinia*-Arten und könnte sehr wohl als eigenes Genus abgetrennt werden. Die Stemmata bei *Dattinia* kann ich übrigens weder bei den Arten der *proximalis*- noch bei denen der *poliopastalis*-Verwandschaft finden.

Eine Aufstellung der neuen Gattung wäre daher trotz des Fehlens der Zunge kaum gerechtfertigt, wenn nicht der ganz auffallende Bau des männlichen Genitalapparates dies verlangte.

***Benderia talhouki spec. nov.***

(Taf. III, figs. 18 u. 18a)

Spw. 19-20 mm. Vfgl. grau mit 2 Querbinden, dunklem Basalfeld und schwarzem Längswisch in der Spitze am äusseren Rande der 2. Querbinde.

Die Art erinnert in Grösse, Gestalt und Zeichnung ungemein an *Stenomatophora leonalis* Obth., ist aber grau in der Grundfarbe, nicht gelbbraunlich, das Basalfeld ist schräger abgegrenzt, also an der Costa schmaler, am Irand etwas breiter. Die Begrenzung ist scharf und nach aussen von einer hellen Binde begleitet. Das ziemlich gleichmässig graue Mittelfeld mit deutlichem Zellschlusspunkt, die äussere Querbinde ist unterhalb der Costa mehr nach aussen ausgebuchtet als bei *leonalis* und vor dem Irand mit einem Zahn nach aussen, der bei *leonalis* fehlt. Ebenso fehlt *leonalis* der schwarze Längswisch in der Spitze und auch die Fühler sind bei *leonalis* anders bewimpert. Sie sind mit Wimperbüscheln zweireihig versehen, wobei die einzelnen Büschel etwa 3 mal so lang wie die Geisselglieder breit sind. Ferner hat *leonalis* den einfachen Gnathos wie alle übrigen Pyralidinen.

Die 2. Querlinie ist nach innen zu dunkel beschattet, ebenso ist über dem schwarzen apikalen Längswisch noch eine Verdunkelung in Richtung zur Flügelspitze. Der Saum und die Fransen sind hell, letztere mit Teilungslinie. Hfgl. hellgrau wie der Saumteil der Vfgl.

Unterseits sind die Vfgl. vor der wenig angedeuteten 2. Querlinie etwas verdunkelt, diese selbst als heller Apikalstrich beginnend. Hfgl. wie oben mit Spuren einer Randbinde.

Fundort : Bender Tchahbahar, Januar und Februar 1938.

Ich widme diese schöne Art meinem lieben Freund A.S. Talhouk, der mir in schwerster Zeit meine wissenschaftliche Weiterarbeit ermöglichte.

***Dattinia conformalis* sp. n. nov.**

(Taf. III, fig. 19)

Spw. des Männchens 14, des Weibchens 16 mm. In Zeichnung und Farbe mit *mavromoustakisi* Rbl. ganz übereinstimmend, nur etwas grösser als diese, die mit 11-12 mm. die kleinste bisher bekannte *Dattinia*-Art ist.

Im männlichen Genitalapparat (Taf. III, fig. 19a) liegt der Unterschied vor allem in dem grossen abgerundeten Uncus und dem kräftigen, viel breiteren Aedeagus, der nicht geknickt und nach der Basis zu nicht verschmälert ist. Die chitinöse Umhüllung des Aedeagus, also wohl der Anellus im Sinne von Pierce und Metcalf, ist auffallend breit und nimmt den ganzen Raum zwischen den beiden Valven ein. Die Valven sind schmal und spitz, aber breiter und nicht so stark zugespitzt wie bei *mavromoustakisi*. Das Vinculum, bei *mavromoustakisi* abgerundet, ist bei *conformalis* zugespitzt. Diese grossen und auffallenden Unterschiede im Genitalapparat stehen in bemerkenswertem Gegensatz zu der völligen Uebereinstimmung in Zeichnung und Farbe des Falters.

Fundort : Bender Tchahbahar, Januar 1938.

Ich bemerke noch, dass die Angaben Rebels in seiner Cypern-Fauna (Mitt. Münch. Ent. Ges., XXIX, Heft IV, p. 353, 1939), wonach *macromoustakisi* in Palästina und Sardinien vorkommen soll, auf irrthümlichen Bestimmungen beruht. Aus Palästina ist bisher sicher nur *atrisquamalis* Hmps., aus Sardinien *staudingeralis* Rag. bekannt. Auch das Vorkommen von *proximalis* Chr. in Palästina halte ich für unbewiesen, solange nicht genaue Genitaluntersuchungen in dieser äusserst schwierigen Gruppe vorliegen. Die früher von Rebel als *proximalis* bezettelten Stücke aus Palästina haben sich nach den von mir vorgenommenen GU sämtlich als *atrisquamalis* Hmps. heraus gestellt. Die Angaben Caradjas (*Iris*, 1916, p. 18) über das Vorkommen von *proximalis* bei Jerusalem und im Jordantal dürften auf den gleichen Verwechslungen beruhen. Ich gebe daher eine Zeichnung des Vfgl. eines Stückes aus Persien, das ich für die echte *proximalis* halte (Taf. III, fig. 25). Es stimmt genau mit der Originalbeschreibung Christoph's (*Horae*, XVII, p. 116) und der sehr guten Abbildung der Art in Romanoff (*Mem. Lep.*, II, T. I, Fig. 7) überein. Danach ist neben der Grösse von 19-20 mm. Spw. für *proximalis* charakteristisch der fast grade Verlauf der 1., das Basalfeld begrenzenden und der Verlauf der äusseren Querbinde, die auf dem Irand nicht senkrecht, sondern schräg aufstösst, ausserdem hier noch einen Zahn nach aussen, kurz vor dem Irand, aufweist. *Atrisquamalis* und die anderen Arten dieser Gruppe haben demgegenüber eine fast senkrecht auf dem Irand aufstossende 2. Querbinde, deren Verlauf auch sonst noch abweichend ist, was am besten aus den beigefügten Abbildungen (Taf. II, fig. 20) hervorgeht.

Im Genitalapparat (Taf. III, fig. 20a) ist *atrisquamalis* (nach 3 Stücken zu urteilen, die ich untersuchen konnte) durch den relativ kleinen Uncus, den gleichmässig dicken Aedeagus und vor allen durch die Ausbildung des Tegumendaches ausgezeichnet. Letzteres hat (in dorsaler Ansicht besonders deutlich) abgerundete Ecken (in der Fig. mit D bezeichnet), während es bei *macromoustakisi* und *proximalis* rechtwinklig begrenzt ist (Taf. III, figs. 21 u. 25).

*Ingrata* Butl. (*Pr. Z. Soc. London*, 1881, p. 621), im Rebel'schen Katalog von 1911 als Synonym von *proximalis* aufgeführt, hat mit dieser Art sicher nichts zu tun, sondern ist eine bona species, die wahrscheinlich in eine ganz andere Gruppe gehört. Die sehr kleine Art von  $6\frac{1}{2}$  lines, also 13 mm. Spw. hat keine, ein Basalfeld begrenzende 1. Querbinde, sondern 2 weiss umrandete schwarze übereinanderstehende Flecken im basalen Viertel und eine sichelförmig verlaufende, auf der Mitte des Irandes beginnende Linie, die sich halbkreisförmig zur Costa wendet. Es liegt hier also ein ganz abweichendes Zeichnungsprinzip vor.



*Rubella* Swinh. (*Proc. Z. Soc. London*, 1884, p. 523) muss indessen auf Grund der Beschreibung als sicheres Synonym von *proximalis* gelten.

Irrtümlich ist dagegen die Auffassung Caradja's (*Iris*, 1916, p. 18), der *staudingeralis* für ein Synonym von *infulalis* Led. hält. *Infulalis*, nach einem Männchen aus Damaskus beschrieben, hat eine Spw. von 22 mm. und eine auf der guten Abbildung sehr deutlich erkennbare 1. Querbinde (*Wien. Ent. Mschr.*, II, T. 3, Fig. 6), die *schräg nach aussen* auf den Irand aufstösst. *Staudingeralis* dagegen, nach 2 Männchen aus Biskra (Algerien) beschrieben, ist nur 18 mm. gross und von der 1. Querbinde heisst es: "oblique sur la côte, verticale ensuite"! Mir liegen sichere Stücke aus Cagliari (Sardinien) vor, die ich nach genauem Vergleich mit der Originalbeschreibung nur für *staudingeralis* halten kann.

Wie ungemein schwierig diese ganze Gruppe ist, geht am besten daraus hervor, dass Ragonot, wie Chrétien nachgewiesen hat (*Ann. Soc. Ent. Fr.*, 84, p. 293, 1915) unter seiner *syrtalis* 3 verschiedenen Arten durcheinandergebracht hat: *syrtalis*, *lobalis* Chrét. und *chrétieni* Luc. Es ist also notwendig, die Bearbeitung dieser Arten unter strengem Vergleich mit den Originalbeschreibungen und durch GU durchzuführen. Andernfalls wird das Chaos in dieser Gruppe nicht mehr zu beheben sein. Andererseits zeigt diese Gruppe auch wieder, wie unsere zoogeographische Forschung von einer sicheren systematischen Arbeit ausgehen muss, wenn sie nicht völlig wertlos sein soll. Wichtiger als alle noch so geistreichen Theorien bleibt nun einmal eine gründliche systematische Arbeit. Es ist notwendig, zu betonen und am Beispiel einer so schwierigen Gruppe sehr deutlich, dass die Systematik die Grundwissenschaft der Biologie ist. Alles andere baut sich auf ihr auf und hat erst dann Sinn und Berechtigung, wenn das Fundament, die Systematik, gesichert ist.

#### ***Dattinia rectangula* spec. nov.**

(Taf. III, figs. 23 u. 23 a)

Spw. 14 mm. Vfgl. grau mit fast grader 1. und zwei rechte Winkel bildender 2. Querlinie, die senkrecht auf dem Irand aufsetzt. Wurzelfeld dunkler als das Mittelfeld.

Diese kleine Art gehört in die *proximalis*-Gruppe und ist von allen andern Arten (*macromoustakisi* Rbl., *proximalis* Chr., *atrisquamalis* Hmps., *staudingeralis* Rag., *syrtalis* Rag., *lobalis* Chrét., *chrétieni* Luc., *kasbahella* Schmidt, *persinualis* Hmps. und *conformalis* Ams.) unterschieden durch den Verlauf der äusseren Querbinde. Diese steht senkrecht auf dem Irand, ohne einen Zahn nach aussen zu machen und geht, wieder genau rechtwinklig, nach aussen, dann wieder rechtwinklig gebogen, nach oben. Sie

bildet also keinerlei Zacken oder Buchten. In ihrer Kleinheit stimmt *rectangula* mit *conformalis* Ams. überein, lediglich *macro-moustakisi* Rbl. ist noch kleiner, die andern genannten Arten durchweg grösser.

Das Wurzelfeld ist verdunkelt, die 1. Querbinde fast grade, kaum gebogen, auf ihrer Iseite von dunkleren Schuppen begleitet. Das Mittelfeld ist ziemlich gleichmässig grau, im ganzen dunkler als bei *atrisquamalis* und *proximalis*. Der Saum ist wenig dunkler als das Mittelfeld, die 2. Querbinde im untern Teil aussen stark verdunkelt. Unterhalb der Costa zeigt die Querbinde nach innen zu eine deutliche Verdunklung und die auch bei *proximalis* vorhandenen 2 dunklen Querstrichelchen.

Hfgl. hellgrau mit schwacher Saumbinde, die vor dem Innenwinkel aufhört. Unterseits sind die Vfgl. kaum dunkler als die Hfgl. mit durchscheinender äusserer Binde.

Palpen einfarbig braungrau.

Genitalapparat des Männchens durch stark geschwungene Valven, grossen, nach dem Ende zu schmaler werdenden Uncus und nach der Basis zu stark verschmälerten Aedeagus ausgezeichnet (GU 366).

Fundort : Bender Tchahbahar, Dezember 1937.

#### ***Dattinia fredii* spec. nov.**

( 'Taf. III, figs. 24 u. 24a)

Spw. 17-19 mm. Vfgl. lehmfarben mit schwach gebrochener 1. Querbinde und stark gewundener 2. Binde. Basalfeld nicht dunkler als das Mittelfeld. Hfgl. hell gelblichgrau, mit kaum angedeuteter Saumbinde, die nur zwischen *cu1* und *cu2* deutlich ist.

Sehr nahe *kasbahella* Schmidt (*Ann. Mag. Nat. Hist.*, Ser. 10, vol. XIV, p. 543, T. XVII, F. 11), mit ihr übereinstimmend in Grösse und dem nicht dunklen Basalfeld, auch sehr ähnlich im Verlauf der beiden Querbinden. Die 1. ist bei *kasbahella* noch stärker gewinkelt, die 2. ist ihrem oberen Teil bei dieser Art noch stärker gewellt, sonst fast ganz wie bei *fredii*. Unterschiede gegenüber *kasbahella* sind ferner das Fehlen des weissen Fleckes in der Zelle, die viel helleren Hfgl. (bei *kasbahella* "darker tawny than in *lobalis* and *staudingeralis*"). Bei *kasbahella* sind die Abdominal-Segmente ausserdem weiss gesäumt, bei *fredii* nicht.

Die 1. Querbinde ist leicht geknickt, auf der Iseite mit blaugrauen Schuppen eingefasst. Solche Schuppen auch im Basalfeld, vor allem unmittelbar an der Wurzel und an der Costa verstreut, ohne jedoch das Wurzelfeld zu verdunkeln. Der am Irand befindliche Teil zwischen 1. und 2. Querbinde ist ganz mit bleigrauen Schuppen ausgefüllt, die sich von hier aus breit an die Iseite der 2. Querbinde bis zur Costa anlegen. Die 2. Querbinde ober-

halb des Irandes mit einem starken Vorsprung nach aussen, insgesamt etwas schräg auf dem Irand aufsitzend. Die weisse äussere Begrenzung am stärksten an der Costa und in der grossen Ausbuchtung unterhalb der Zellecke. Saumfeld ziemlich gleichmässig lehmfarben, Saumstriche bleigrau, Fransen hell und grau gemischt.

Hfgl. hell, ganz schwach lehmfarben angeflogen, nur am Rande zwischen cu1 und cu2 etwas verdunkelt. Thorax, Kopf und Palpen lehmfarben. Unterseits sind die Vfgl. in ihrem costalen Teil verdunkelt, die äussere Querlinie schwach durchscheinend, mit einem dunklen Fleck an der Costa beginnend, unmittelbar dahinter eine gelbliche Aufhellung.

Genitalapparat des Männchens : Uncus abgerundet. Aedeagus so lang wie der ganze Genitalapparat ohne Uncus, am vorderen Ende leicht gebogen und scharf zugespitzt, unterhalb der Mitte am dünnsten. Vor der Basis leicht verdickt, dann zugespitzt (GU 364).

Fundort : Laristan, November 1937, und Bender Tchahbahar, 3.3. 1938.

Ich widme diese hübsche Art Herrn Fred Brandt in Anerkennung seiner hervorragenden Verdienste um die Erforschung Persiens.

Aus Palästina (Jericho 16.11.1931 und 28.4.; Georgskloster 21.5.1930) liegen mir noch 1 Männchen und 2 Weibchen vor, die ich als ssp. *keltalis* nov. bezeichne. Sie weichen von der persischen Nominatform durch graue, nicht lehmfarbene Grundfarbe ab und die 2. Querbinde zeigt dort, wo sie nach dem Iwinkel gerichtet ist, eine deutliche Spitze, während die Nominatform hier einen abgerundeten Verlauf der Binde erkennen lässt. Das Wurzelfeld ist auch dunkler als das Mittelfeld. Im Genitalapparat des Männchens konnten keine greifbaren Unterschiede festgestellt werden.

#### ***Dattinia colchicaloides* spec. nov.**

(Taf. III, figs. 26 u. 26 a)

*Spw.* 25 mm. Grösse, *Habitus* und *Zeichnungsanlage* wie bei *Constantia colchicalis* HS. (=numidalis Hmps).

Durch die unterseits zweireihig mit Wimperbüscheln versehenen Fühler des Männchens und das Geäder des Vfgl. eindeutig zu *Dattinia* gehörig. Im Vfgl. sind r4 und r5 so kurz gestielt auf r3, dass alle 3 Adern fast aus einem Punkt entspringen. Im Hfgl. entspringen m2 und m3 dicht beieinander.

Vfgl. hellgrau. Wurzelfeld dunkelgrau, scharf durch die 1. Querlinie begrenzt, die etwas gewellt oder zum Irand geknickt ist. Mittelfeld hellgrau, in der Nähe des Wurzelfeldes am hellsten, im Gebiet der Zelle und auf der Innenseite der 2. Querlinie mehr oder weniger verdunkelt. 2. Querlinie

genau wie bei *colchicalis* HS. verlaufend, ebenso der dunkle Schatten, der von der Spitze zum Innenrand über die 2. Querlinie hinweggeht. Fransen mit Basal- und Teilungslinie.

Hfgl. an der Wurzel heller, sonst grau mit schwacher Randbinde. Unterseits ist der Vfgl. bis zur deutlich vorhandenen 2. Querbinde grau, nur am Irand heller. Costa kurz vor der Binde aufgeheilt. Die Binde selbst verläuft lange nicht so geschwungen wie auf der Oberseite, hinter der Binde, direkt an der Costa, ein heller Apikalfleck. Apikalfeld dunkler grau. der darunter befindliche Saumteil hell wie der Irand.

Hfgl. wie der Iran der Vfgl. hell mit Zellschlusspunkt und deutlicher Saumbinde, der sich nach dem Iwinkel zu verliert.

Zunge sehr kurz, in ausgerolltem Zustand die kurzen Palpen eben überragend. Palpen über die Augen nur wenig hinausragend, hell und dunkel graubraun gemischt. Letztes Glied nackt, klein, hängend. Thorax von der Färbung des Basalfeldes der Vfgl. Abdomen wie die Hfgl.

Genitalapparat des Männchens dem von *colchicalis* ähnlich, aber der Aedeagus ohne das für *colchicalis* charakteristische schräg verlaufende Chitinband in seiner Mitte. Valven breiter, viel gleichmässiger gerundet, stark beschuppt, Winkel des Tegumendaches (D) stumpf, bei *colchicalis* spitz.

Fundort: Fort Sengan, 1800 m., 20.5.1938.

***Dattinia iranalis* spec. nov. (1).**

(Taf. IV, fig. 27)

Der *poliopastalis* Hmps. so nahe, dass die Angabe der unterscheidenden Merkmale genügt:

Spw. 25-31 mm. Die erste Querbinde hat bei *poliopastalis* einen Zahn, der zum Irand weist, bei *iranalis* ist dieser Zahn noch ausgeprägter und nicht zum Irand gerichtet, sondern horizontal verlaufend, also fast zur Mitte des Aussenrandesweisend. Das Weiss beider Querbinden ist viel weniger deutlich, weswegen die Art insgesamt einen bedeutend weniger lebhaften Eindruck macht.

Geäder des Vfgl.: r4 und r5 (7 und 8) entspringen kurz gestielt auf r3. Im Hfgl. m2, m3 und cu1 sehr dicht beieinander.

In Genitalapparat sind die Unterschiede sehr auffallend (Taf. IV, fig. 27a). Uncus, Aedeagus und Valven sind bei *poliopastalis* viel breiter,

(1) Nach Abschluss des Manuskriptes ging mir durch die lebenswürdige Vermittlung von Prof. Dr. M. Hering die Type und Paratype von *Constantia canifusalis* Hamps. zu. Nach genauem Vergleich dieses Typenmaterials ist festzustellen, dass die von mir für *poliopastalis* gehaltenen Stücke tatsächlich die echte *canifusalis* darstellen. Die GU 345 (Fig. 28) stellt also diese Art und nicht *poliopastalis* dar. Was nun *C. poliopastalis* ist, bleibt vorläufig noch unklar. Hampson hat jedenfalls seine eigene *canifusalis* "with pectinated antennae" falsch beschrieben. *Canifusalis* ist eine *Dattinia* mit nicht gekämmten Fühlern!

die Cornuti bestehen bei dieser Art aus einer Reihe von Chitinstacheln (bei dem abgebildeten Exemplar ejakuliert), bei *iranalis* stellen sie ein langes, schmales Band feiner Chitinleisten dar (in der Zeichnung als Co bezeichnet). Auch die sonstigen Bildungen des Anellus sind bei beiden Arten ganz verschieden. Vor allem hat *iranalis* im letzten Viertel des Aedeagus einen quer verlaufenden Chitindorn (D), der bei *poliopastalis* ganz fehlt. Dafür besitzt wiederum *poliopastalis* eine Reihe kräftiger Chitinhöcker, die schräg von oben nach unten über den oberen Teil des Aedeagus im Halbkreis hinweggehen (H in Taf. IV, fig. 28).

Trotz grosser äusserer Ähnlichkeit stehen sich beide Arten also nicht sehr nahe.

Ich bemerke noch, dass einige als *canifusalis* Hmps. bezettelte Stücke der Dumont'schen Sammlung des Pariser Museums in den Genitalien keine Unterschiede gegenüber *poliopastalis* aufweisen. Falls die Bestimmung dieser Stücke als *canifusalis* richtig ist, fallen beide Arten zusammen. Im übrigen gehört die Art, wie auch *iranalis*, eindeutig zu *Dattinia* und nicht zu *Constantia* bezüglich Fühler- und Geäderbildung. Auffällig ist freilich, dass Hampson am Ende der Beschreibung von *poliopastalis* schreibt: "*C. canifusalis* with pectinated antennae, etc." und Chrétien (*Ann. Soc. Ent. Fr.*, 85, p. 444, 1916) von *poliopastalis* schreibt: "le ♂ de *C. poliopastalis* de Biskra a les antennes pectinées et roulées en crosse comme *C. canifusalis* de Syrie, autrement il n'appartiendrait pas au genre *Constantia*."

Die als *C. poliopastalis* bezettelten Stücke des Wiener Museums und die *canifusalis*-Stücke der Dumont'schen Sammlung haben jedenfalls nicht gekämmte Fühler! Erst ein Vergleich der Typen wird hier eine wirkliche Entscheidung bringen können. Möglicherweise liegen Parallelarten der Gattungen *Dattinia* und *Constantia* vor, wie dies bei *Constantia colchicalis* HS. und *Dattinia colchicaloides* Ams. der Fall ist.

Mit *affinis* Rtsch. (*J. Bombay Nat. Hist. Soc.*, XXVIII, p. 177), die ein schneeweisses 1. Abdominalsegment besitzt, hat *iranalis* nichts zu tun.

Fundort: Sardze, November 1937; Keredj, 1400 m.; Laristan, November 1937; und Samarra (Irak), leg. E.P. Wiltshire, 13.10.1936.

#### ***Constantia brandti* spec. nov.**

(Taf. IV, fig. 29)

Spw. 23-30 mm. Vfgl. lehmfarben mit 4 weissen grossen Flecken und einer von der Wurzel zum Irand ziehenden weissen Binde.

Die Art gehört in die *argentalis*-Gruppe, die Flecken sind aber nicht silbern, sondern rein weiss. Die lehmfarbene Grundfarbe ist an der Costa blasser. Aus der Wurzel zieht eine breite, weisse Binde zum Irand, wird



bei  $\frac{1}{3}$  des Irandes sehr schmal und steigt dann wieder in Richtung zum Apex auf, breiter werdend und mit einer knieartigen Wendung abschliessend. Ein grosser weisser Fleck liegt in dem durch die Wurzelbinde geschaffenen Bogen, er steht mitunter durch ein schmales Band mit der Wurzelbinde in Verbindung. Am oberen Rand des grossen Fleckes schliesst sich, nur durch einen schmalen Streifen der Grundfarbe getrennt, ein länglicher, rechteckiger Fleck an, der bis zum Zellende reicht. An ihn schliesst sich in Richtung Flügelspitze ein länglicher, nach der Costa zu unscharf begrenzter, viel weniger auffallender, schmaler Fleck an, der bis zur Costa reicht. Im Anschluss an das "Knie" der Wurzelbinde folgt ein hornartig gebildeter grosser Fleck, der bei einzelnen Stücken mit dem "Knie" in Verbindung steht. Am Innenwinkel noch ein kleiner unscheinbarer weisser Wisch. Alle Flecke und die Binde sind ziemlich scharf begrenzt. Nur der costale Fleck auf seiner Innenseite nicht, in die Grundfarbe übergehend. Fransen fast weiss. Hfgl. fast weiss, am Rande etwas lehmfarben. Fransen ebenfalls weiss. Useite beider Flügelpaare wie die Oseite der Hfgl. mit kaum durchscheinenden Flecken, am Zellende leicht verdunkelt. Thorax, Kopf, Abdomen und Fühlerschaft weisslich, Tegulae am Ende lehmfarben. Palpen so lang wie der Augendurchmesser, gelblich, letztes Glied an der Spitze weisslich. Zunge fehlt. Im Vfgl. r3 und r4 kurz gestielt auf r5, letztere unterhalb der Spitze in den Rand. Im Hfgl. m2 und m3 aus einem Punkt bzw. kurz gestielt. Analis ohne Wurzelschlinge.

Genitalapparat des Männchens (GU 337) durch sehr breiten, abgerundeten Uncus, kräftigen Gnathos, im oberen Teil stark verjüngte Valven ausgezeichnet (Taf IV, fig. 2 a).

Fundort: Kouh i Taftan. Ausserdem liegen mir noch Exemplare aus Ahwaz (Irak), 7.5.38, leg. E.P. Wiltshire vor.

Ich widme diese prachtvolle Art Herrn W. Brandt.

Abschliessend bemerke ich noch, dass Ragonot in *Ann. Soc. Ent Fr.*, 1891, p. 68 das Genus *Constantia* u.a. beschreibt als: "trompe minuscule, cachée entre les palpes". Ich habe aber weder bei *colchicalis* HS., der Gattungstype, noch bei den Arten der *argentalis*-Gruppe eine Zunge entdecken können.

#### *Constantia subargentalis* spec. nov.

(Taf. IV, fig. 30)

Grosse und Zeichnung wie *argentalis*. Hfgl. grau-lehmfarben, aber die Flecken der Vfgl. rein weiss, nicht silberglänzend, Labialpalpen viel kürzer, nur doppelt so lang wie der Augendurchmesser (bei *argentalis* Hmps. 3-4 mal so lang).

Genitalapparat des Männchens durch kurzen Aedeagus, schmale Valven, deren Ventralseiten deutlich gewinkelt sind, ausgezeichnet, basalwärts grade, nicht gebogen gegen das Vinculum hin auslaufend. Uncus etwas breiter und niedriger als bei *argentalis*, aber diesem sehr ähnlich (Taf. IV, fig. 31). Mit *bertazzi* Trti. in den kurzen Palpen übereinstimmend, aber die saumwärts gelegenen Silberflecke dieser Art breiter, mit deutlichen Zähnen nach dem Saum zu, Valven bei *bertazzi* an der Ventralseite ohne Winkel, Uncus kleiner und schmaler, mehr halbkreisförmig. Aedeagus basalwärts stark verschmälert.

Fundort: Fort Sengan, 1800 m.

***Constantia indistinctalis* spec. nov.**

(Taf. IV, fig. 32)

Spw. 28 mm. Vfgl. einfarbig grau-bräunlich mit kaum erkennbarer 1. und 2. Querlinie. Hfgl. nur wenig heller.

Die Art ist fast zeichnungslos, da die beiden Querbinden sich kaum abheben. Die 1. bei  $1/4$  steht grade auf dem Irand, kaum gewinkelt oder gewellt. Die 2. beginnt bei  $5/6$  der Costa und zieht dann im Bogen, kaum erkennbare Zähnchen nach aussen bildend, zu  $3/4$  Irand, auf dem sie senkrecht aufsitzt. Fransen gleichfarbig. Useite beider Flügel grau-gelblich, äussere Querbinde im costalen Teil ganz schwach angedeutet. Palpen doppelt so lang wie der Augendurchmesser, grau-bräunlich wie die Vfgl., Kopf und Thorax. Abdomen wie die Hfgl. gefärbt.

Im Geäder des Vfgl. entspringt  $r_3 + r_4$  auf  $r_5$ , im Hfgl.  $m_2$  und  $m_3$  aus einem Punkt, also das normale Geäder von *Constantia*.

Genitalapparat des Männchens (Taf. IV, fig. 32a): Aedeagus sehr eigentümlich durch die beiden kräftigen scharfen Spitzen am vorderen Ende und die beiden auffälligen parallelen Chitinleisten im Innern, die ganz feine Querrippen aufweisen (Ch in der Figur). Aedeagus nach der Basis gleichmässig zylindrisch, ziemlich lang. Valven breit, Uncus fast quadratisch.

Der Zeichnung und dem Genitalapparat nach steht die Art durchaus isoliert in der Gattung.

Fundort: Sardze, Mitte November, 1937.

***Constantia infascialis* spec. nov.**

(Taf. IV, fig. 33)

Spw. 25 mm. Vfgl. grau-bräunlich, fast zeichnungslos, mit einer kaum wahrnehmbaren Andeutung des oberen Teiles der äusseren Querlinie.

Die so gut wie zeichnungslose Art zeigt bei  $5/6$  an der Costa einen kleinen dunklen Fleck als Anfang der äusseren Querbinde, sowie einige

zähnenartige Schatten als Andeutung diese Querlinie, die in der für die *Constantia*-Arten üblichen Form geschwungen bis zur Mitte des Flügels gehen. Sonstige Zeichnungen fehlen. Hfgl. etwas heller, ebenso das Abdomen, das auf dem ersten Segment einen leicht gelblichen Anflug zeigt, im übrigen schwach seidenglänzend ist. Thorax; Kopf, Palpen und Maxillarpalpen von der Vfgl.-Farbe. Palpenlänge etwa 3 mal so lang wie der Augendurchmesser, aussen dunkler grau als innen und vor allem unten. Die gekämmten Fühler in der typischen Form am Ende eingerollt. Useite durch die stark angedeutete äussere Querbinde, die aber auch hier nur bis zur Mitte des Flügels geht, auffallend. Vor ihr ist der costale Teil des Flügels verdunkelt, der Innen- und Aussenrand aber heller, sodass die Useite der Vfgl. gegenüber der eintönigen Oseite sehr auffällig ist.

Hfgl. hell wie der Irand der Vfgl. mit deutlicher, wenn auch schwacher Querbinde von der Costa bei  $\frac{3}{4}$  bis zur Mitte des Flügels.

Genitalapparat des Männchens (Taf. IV, fig. 33a): Uncus klein, abgerundet, nach der Basis zu verschmälert, Aedeagus an der Basis schmal, dann von  $\frac{1}{4}$  der Länge ab breiter werdend. Cornuti als ringförmiger Kranz feiner Chitingebilde entwickelt (in der Zeichnung ejakuliert, am oberen Ende des Aedeagus sitzend). Gnathos sehr schmal Vinculum abgerundet. Valven unmittelbar an der Basis breit, dann ziemlich plötzlich verengt und von hier ab gleichmässig breit bleibend.

Die Art steht keiner bekannten nahe.

Fundort: Bender Tchahbahar, Dezember, 1937.

#### ***Constantia strictalis spec. nov.***

(Taf. IV, fig. 34)

*Spw.* 21 mm. Vfgl. schmal, Grundfarbe grau, 1. Querlinie bei  $\frac{1}{5}$ , 2. bei  $\frac{5}{6}$  beginnend, stark geschwungen und nach aussen gezackt. Wurzelfeld nicht dunkler. 2 keisförmige Aufhellungen nacheinander am Ende der Zelle. 1. Abdominalsegment gelblich, die übrigen grau.

Die Art ist zart und schmalflüglig. Die graue Grundfarbe ist ganz gleichmässig ohne ein Wurzel- oder Mittelfeld abzuheben. Die 1. Querbinde ist im Gesamtverlauf grade, in der Mitte etwas nach aussen und wieder nach innen geknickt. Die äussere Querbinde ist aussen hell angelegt, sie beginnt bei 5,6, geht zunächst, nur kleine Zähnchen nach aussen bildend, fast parallel zum Saum bis zu dessen Mitte, biegt dann scharf nach innen um und geht dann bogenförmig zum Irand bei  $\frac{3}{4}$ , auf dem sie fast senkrecht aufstösst. Saumfeld nicht heller als der übrige Flügel. Von den beiden Aufhellungen am Ende der Zelle ist die wurzelwärts gelegene etwas grösser Hfgl. gleichmässig grau, Fransen kaum heller.

Palpen schwach nach unten hängend, 2 mal so lang wie der Augendurchmesser, heller und dunkler grau gemischt. 1. Abdominalsegment durch gelbliche Färbung von den übrigen verschieden, die sonst wie die Hfgl. gefärbt sind. Thorax und Kopf wie die Vfgl.-Grundfarbe. Die stark gekämmten Fühler mit der für *Constantia* typischen Einrollung am Ende.

Genitalapparat des Männchens (Taf. IV, fig. 34a) durch langen, parallelrandigen Uncus und basalwärts stark verschmälerten, knopfförmig endenden Aedeagus ausgezeichnet.

Die Art erinnert an die kleine und schmalflüglige Unterart *strobilacalis* Chrét. der *caidalis* Hmps., ist aber im Genitalapparat durchaus verschieden.  
Fundort: Bender Tchahbahar, 16.2.1938.

***Constantia benderalis* spec. nov.**

(Taf. IV, fig. 35)

Spw. ♂ 20, ♀ 23 mm. Vfgl. ziemlich kurz und breit, Grundfarbe dunkelgrau-braun. 1. Querlinie bei 1/5 senkrecht von der Costa zum Irand, 2. Querlinie bei 5/6, nur auf der Anals mit einem Zahn, nicht sehr stark geschwungen. Hfgl. dunkel, an der Wurzel kaum heller.

Die kleine gedrungene Art mit noctuidenartigem Charakter ist der *predotae* Schaw. (die nicht zu *Dattinia*, sondern wegen der gekämmten Fühler zu *Constantia* gehört, die Type liegt mir vor) ausserordentlich ähnlich und macht den Eindruck einer kleinen Form dieser Art. Die 1. Querlinie ist jedoch viel weniger gezackt, bzw. gewellt als bei *predotae*. Auch ist *benderalis* noch etwas dunkler, das Weiss der Zeichnung tritt mehr zurück, die Paipen sind etwas kürzer, 1½ bis höchstens 2 mal so lang wie der Augendurchmesser. Die Fühler des Männchens wie bei *predotae* kurz gekämmt, die des Weibchens geringelt, nackt. Die äussere Querlinie unterseits sehr deutlich auf Vorder- und Hfgl. wie bei *predotae*.

Genitalapparat des Männchens (GU 375, Taf. IV, fig. 35a): Uncus von der Basis zur Spitze verschmälert, abgerundet, nicht gross, Aedeagus einfach, leicht gekrümmt, von der Basis nach oben leicht verschmälert, dann wieder dicker werdend. Valven ziemlich stark geschwungen, Winkel des Tegumendaches fast rechtwinklig, nicht stumpf.

Fundort: Bender Tchahbahar, Februar und Anfang März, 1933.

***Constantia rara* Ams., *sinaica* Rbl., *debskii* Rbl. und *ochrofusalis***

Zu der von mir aus Palästina beschriebenen *Constantia rara* (Mitt. Zool. Mus. Berlin, 20, p. 288, T. 10, fig. 29) sei ergänzend mitgeteilt, dass sie nicht zu *Constantia*, sondern zu *Dattinia* Rag. zu stellen ist, da die Fühler nicht gekämmt, sondern unterseits zweireihig mit feinen Winperbüscheln

versehen sind und auf den Vfgl. r4 + r5 lang gestielt auf r3 entspringt, im Hfgl. m2 und m3 aus einem Punkt kommen. Stemmata kann ich nicht erkennen. Das gleiche gilt übrigens auch von *Constantia debskii* Rbl., 1912 und *sinaica* Rbl., 1903. Die letzteren beiden Arten dürften höchstwahrscheinlich identisch sein, da das Hauptunterscheidungsmerkmal, der Verlauf der beiden Querbinden, Schwankungen unterworfen ist. Bei *debskii* sind die Querlinien am Irand stark genähert, fast zusammenstossend, bei *sinaica* deutlich, zum Teil weit getrennt. Die Genitaluntersuchung von einem mit der Originalbeschreibung von *debskii* genau übereinstimmenden Männchen aus Aegypten, bei dem die Querlinien, wie auf der Abbildung (*Iris*, 1912, p. 80, fig.) fast zusammenstossen und eines anderen Exemplares aus Aegypten, bei dem sie deutlich getrennt den Irand berühren, sowie eines Stückes aus Algerien (als *ochrofusalis*, ohne Autorangabe zugesandt), bei dem die Querlinie weit getrennt von einander den Irand erreichen, also der Beschreibung von *sinaica* entspricht, beigten keinerlei greifbare Unterschiede. Ich bin daher der Auffassung, dass *debskii* ein Synonym von *sinaica* ist und dass es sich hier um eine Art handelt bei der der Verlauf der beiden Querlinien ziemlich erheblich schwankt. Auch sonst variiert die Art stark in Bezug auf Verdunkelung des Mittelfeldes. Es gibt Stücke, bei denen das Mittelfeld stark verdunkelt ist und solche, bei denen es sich kaum von der übrigen Flügelfläche abhebt. Es wird sich empfehlen, die verschiedenen Namen für die Formen mit unterschiedlichem Verlauf der Querlinien beizubehalten.

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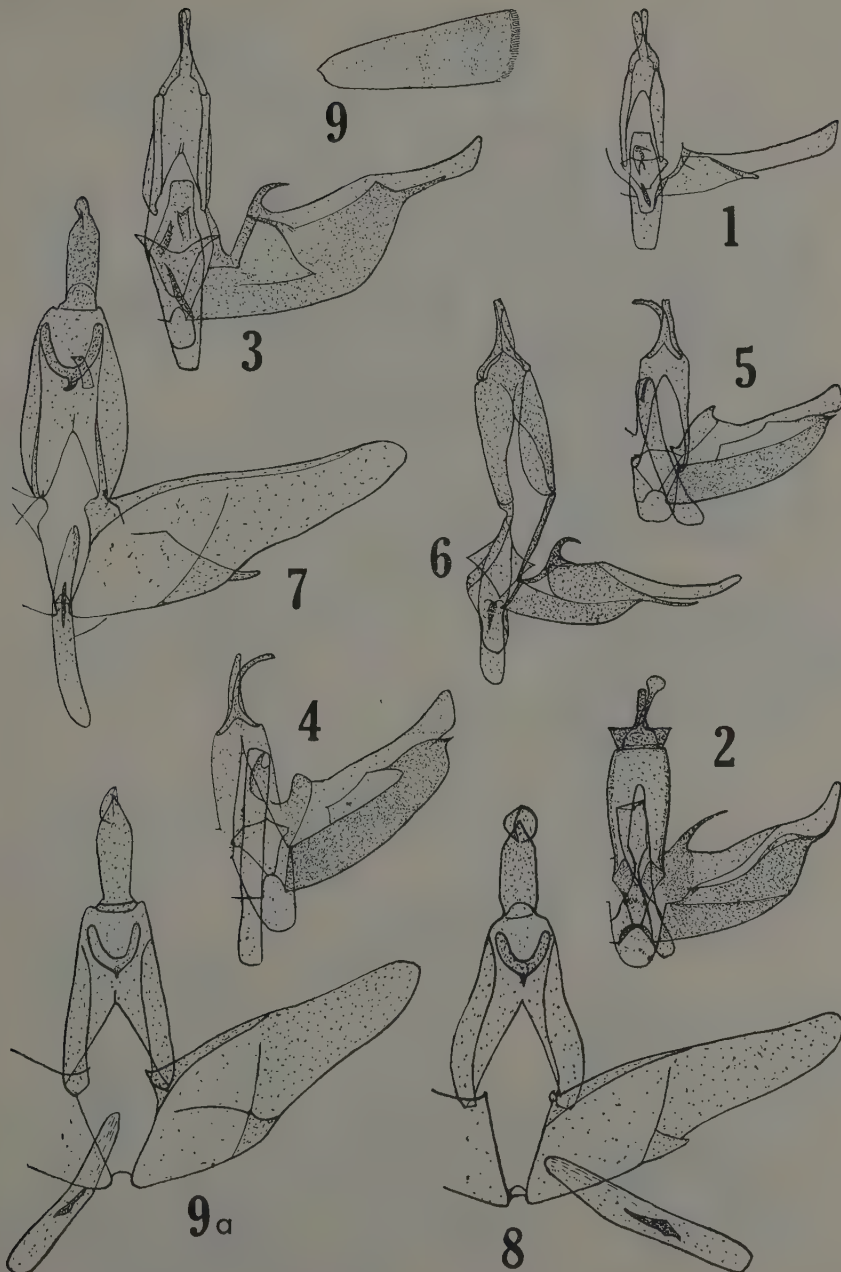


## TAFELN I-IV

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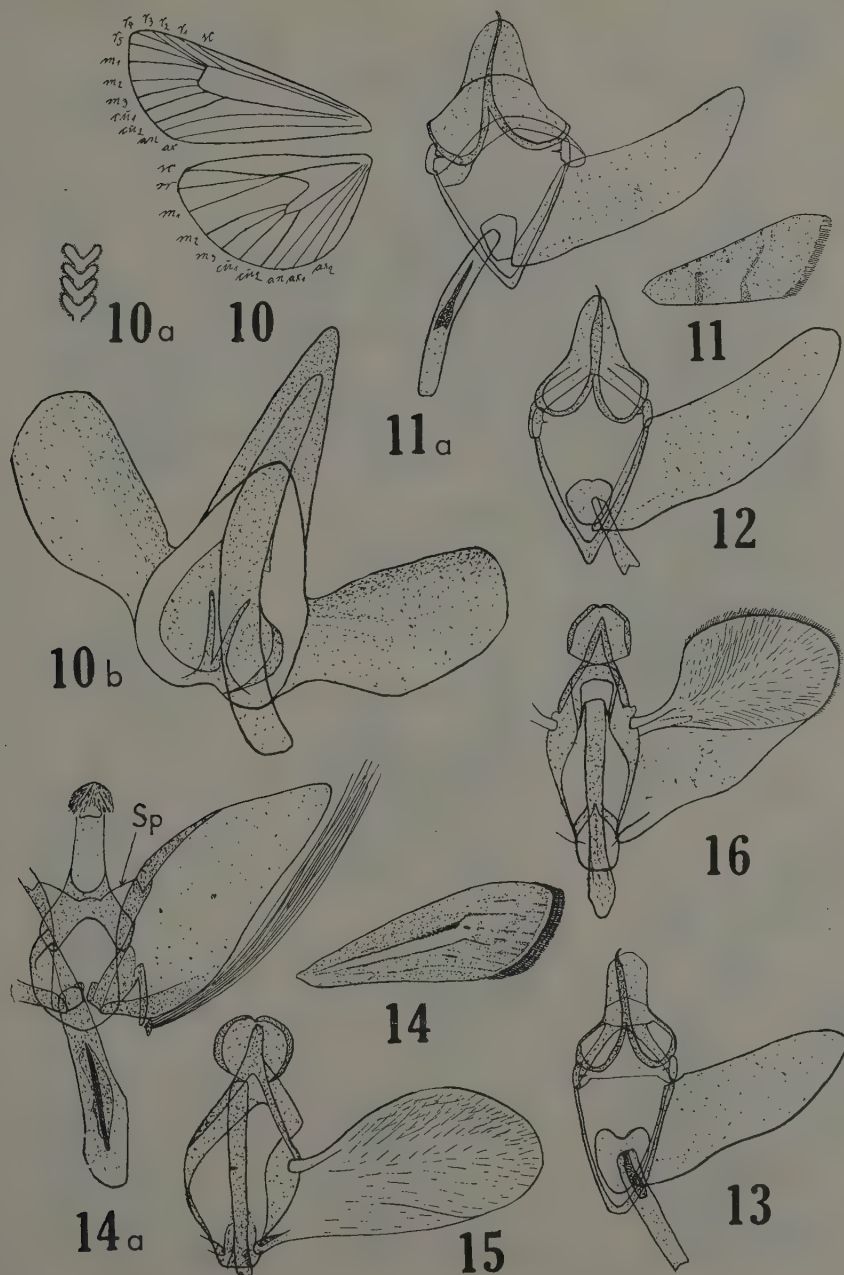
**Figuren-Erklärung für Tafel I**

- Fig. 1 : *Eromene keredjella* Ams. (GU 318), Keredj, Elbursgebirge.  
Fig. 2 : ?*Eromene pulverosa* Chr. (GU 317), Keredj, Elbursgebirge.  
Fig. 3 : *Eromene islamella* Ams. (GU 319), Tchouroum (Iran).  
Fig. 4 : *Eromene bahlutella* Ams. (GU 320), Süden des Toten Meeres.  
Fig. 5 : ?*Eromene joiceyella* Schmidt (GU 315), Sardinien.  
Fig. 6 : *Eromene cambridgei* Z. (GU 321), Süden des Totes Meeres.  
Fig. 7 : *Talis iranica* Ams. (GU 309), Keredj, Elbursgebirge.  
Fig. 8 : *Talis quercella* Schiff. (GU 313), Ungarn.  
Fig. 9 : *Talis occidentalis* Ams., Algier, Hassi Bahbah (T y p u s).  
Fig. 9a : *Talis occidentalis* Ams. (GU 310), Algier, Hassi Bahbah.
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**Figuren-Erklärung für Tafel II**

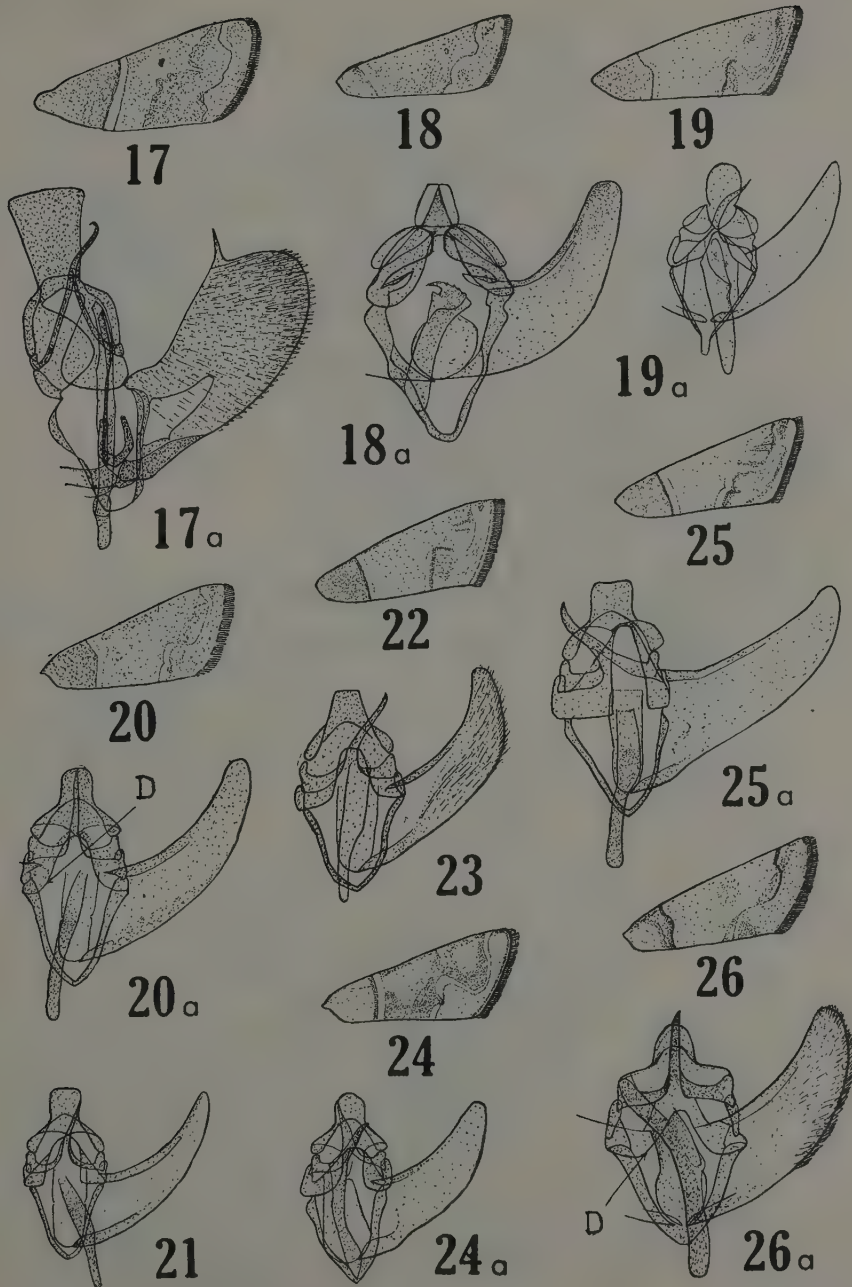
- Fig. 10 : *Aeglotis argentalis* Chr.  
Fig. 10a : *Aeglotis argentalis* Chr., 4 Fühlerglieder von unten und schräg hinten gesehen.  
Fig. 10b : *Aeglotis argentalis* Chr. (GU 307), Keredj, Elbursgebirge.  
Fig. 11 : *Actenia persica* Ams.  
Fig. 11a : *Actenia persica* Ams. (GU 288), Comé (Iran, Fars).  
Fig. 12 : *Actenia honestalis* Tr. (GU 287), Hercegorina.  
Fig. 13 : *Actenia brunnealis* Tr. (GU 286), Budapest.  
Fig. 14 : *Euclasta mirabilis* Ams.  
Fig. 14a : *Euclasta mirabilis* Ams. (GU 374), Belutschistan.  
Fig. 15 : *Emprepes palealis* Ams. (GU 296), Comé (Iran, Fars).  
Fig. 16 : *Emprepes chirazalis* Ams. (GU 295), Chiraz (Iran, Fars).
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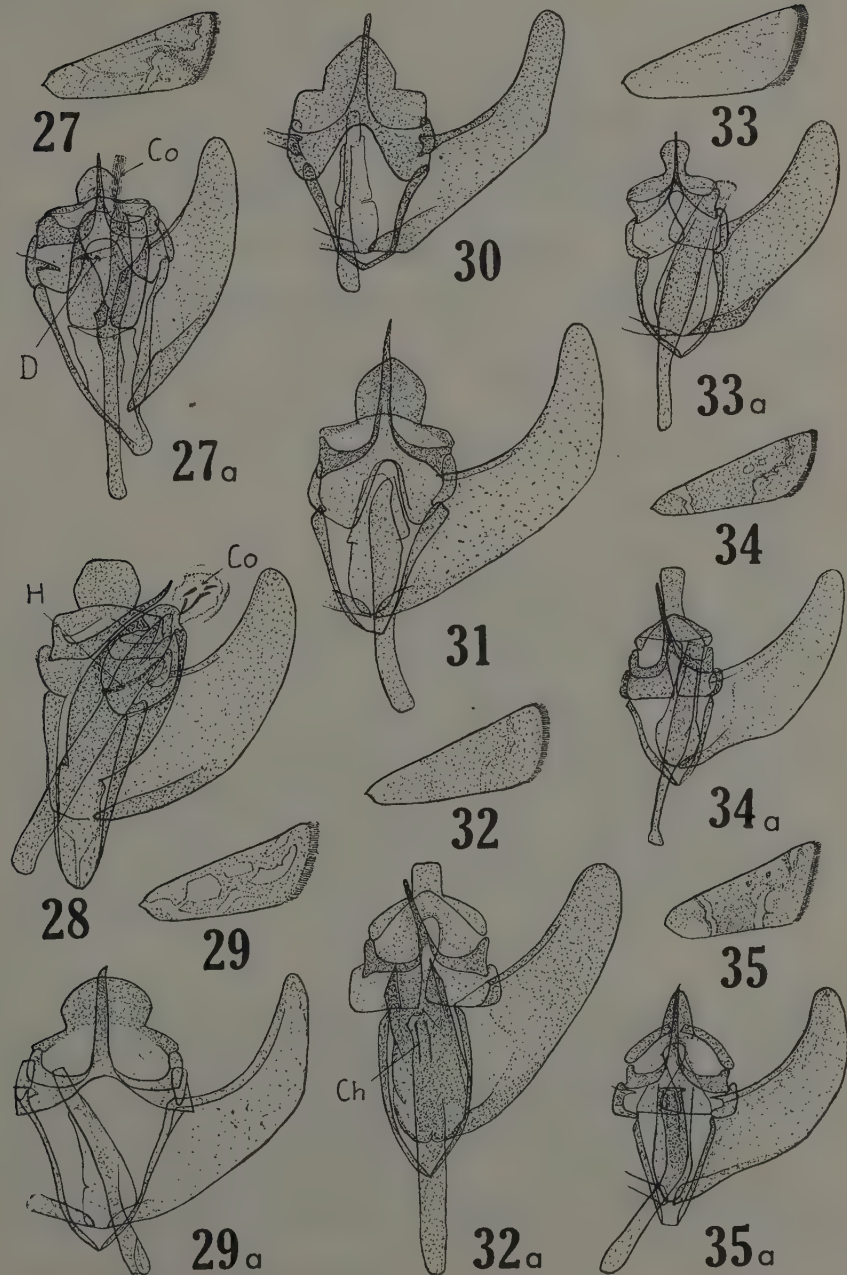
**Figuren-Erklärung für Tafel III**

- Fig. 17 : *Lepidogma tamaricalis* Mn.  
Fig. 17a : *Lepidogma tamaricalis* Mn. (GU 380), Belutschistan.  
Fig. 18 : *Benderia talhouki* Ams.  
Fig. 18a : *Benderia talhouki* Ams. (GU 376), Belutschistan.  
Fig. 19 : *Dattinia conformalis* Ams.  
Fig. 19a : *Dattinia conformalis* Ams. (GU 365), Belutschistan.  
Fig. 20 : *Dattinia atrisquamalis* Hmps., Wadi Kelt (Palästina).  
Fig. 20a : *Dattinia atrisquamalis* Hmps. (GU 370), Wadi Kelt (Palästina).  
Fig. 21 : *Dattinia mavromoustakisi* Rbl. (GU 372a), Cypern.  
Fig. 22 : *Dattinia rectangula* Ams.  
Fig. 23 : *Dattinia rectangula* Ams. (GU 366), Belutschistan.  
Fig. 24 : *Dattinia fredii* Ams.  
Fig. 24a : *Dattinia fredii* Ams. (GU 364), Laristan.  
Fig. 25 : *Dattinia* ? *proximalis* Chr., Comé (Iran, Fars).  
Fig. 25a : *Dattinia* ? *proximalis* Chr. (GU 367), Comé (Iran, Fars).  
Fig. 26 : *Dattinia colchicaloides* Ams.  
Fig. 26a : *Dattinia colchicaloides* Ams. (GU 334), Belutschistan.
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**Figuren-Erklärung für Tafel IV**

- Fig. 27 : *Dattinia iranalis* Ams.  
Fig. 27a : *Dattinia iranalis* Ams. (GU 378), Laristan.  
Fig. 28 : *Dattinia* ? *poliopastalis* Hmps. (GU 345), Jericho (Palästina).  
Fig. 29 : *Constantia brandti* Ams.  
Fig. 29a : *Constantia brandti* Ams. (GU 337), Belutschistan.  
Fig. 30 : *Constantia subargentalis* Ams. (GU 338), Belutschistan.  
Fig. 31 : *Constantia argentalis* Hmps. (GU 363), Palästina.  
Fig. 32 : *Constantia indistinctalis* Ams.  
Fig. 32a : *Constantia indistinctalis* Ams. (GU 335), Laristan.  
Fig. 33 : *Constantia infascialis* Ams.  
Fig. 33a : *Constantia infascialis* Ams. (GU 340), Belutschistan.  
Fig. 34 : *Constantia stricticalis* Ams.  
Fig. 34a : *Constantia stricticalis* Ams. (GU 339), Belutschistan.  
Fig. 35 : *Constantia benderalis* Ams.  
Fig. 35a : *Constantia benderalis* Ams. (GU 375), Belutschistan.
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On the Microlepidoptera  
collected by E. P. Wiltshire  
in Irak and Iran<sup>(1)</sup>  
in the years 1935 to 1938

[with 2 Text-Figures, and XII Plates]

by (2) Dr. H.G. AMSEL (Buchenberg, Baden)

**A. GENERAL**

In the years 1935-1938, Mr. E.P. Wiltshire collected rich material of Middle East Macro- and Microlepidoptera of which only the Macrolepidoptera have been studied and published hitherto. Part of the Microlepidoptera were described by E. Meyrick in his "Exotic Microlepidoptera", Vol. V, as far as they were new species, but on the collections as a whole it was not possible until the present to publish anything. Thus it is a great pleasure to me to issue a complete revision of this very valuable material, the more so as the great delay, caused by the war, has at last been overcome.

The material is of great scientific interest, not only for the discovery of so many new species, but especially for the fact that territories were for the first time explored microlepidopterologically which had had to be considered hitherto as "terra incognita". If we add that the exploration of

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(1) I also collected at Hamadan and Mt. Alvand in 1938 but the microlepidoptera therefrom, except for one or two only, were not sent to Dr. Amsel. Only those collected in 1938 near Ahwas (province Khuzistan, olim Arabistan, S.W. Iran) were so sent, it being felt that the species taken east of the Zagros tree-belt belonged to a rather different fauna and would be better studied later, with my other material from the same part of Iran, rather than with Iraqi material which is all from the Zagros tree-belt or the desert tracts to the south-west. Thus this article by Dr. Amsel is primarily on Iraq. Only the most adjacent and similar parts of Iran (Persia) are included (E.P. Wiltshire).

(2) Translated from the German by Professor H. Priesner and Mr. E.P. Wiltshire. The footnotes are by the latter.

Iran by Brandt <sup>(3)</sup> made at the same time in nearly all parts of that vast country which was till then an almost equally unknown part of the eremic subregion, it is evident how essential were Wiltshire's researches in Mesopotamia and South-West Iran : they supplement, as it were, the great researches of Brandt, so that both these areas, through the intensive work of a few years only, can now be added to the list of well-explored countries, the more so as the not yet studied, further material, that Wiltshire was able to collect from 1939 to 1944 in these countries, will further complete the microlepidopterological picture.

We are therefore approaching the possibility of viewing the whole desertic belt of the Old World from Iran to Morocco, and there will be made possible in the near future for the first time a microlepidopterological analysis of these very interesting parts of the palaearctic region. Wiltshire's collections of 1935-1938 have, therefore, to be judged on the basis of these general considerations, in order rightly to appreciate their scientific importance. Their value chiefly consists in the decisive contribution they give to this possibility, as they imply much more than a simple faunistical contribution of the local nature. Still, we are far from being able to give a zoogeographical analysis of the desertic belt of the Old World from a microlepidopterological view. There is still wanting a critical study of the papers published on the Cyrenaica, Algeria, Tunisia and Morocco by Turati, Chrétien, Lucas, Walsingham, Dumont, Zerny, Rebel and others. Many and thorough systematic studies will be necessary, before we will be able to approach such a great task. But already one point can and must be stressed : What the above named authors have accomplished for the North African desert regions, Wiltshire and Brandt have carried through for Mesopotamia and Iran. And thus, in fact, the links of the chain from Morocco to Iran are united, the last large gap has been closed, since the intermediate eremic regions from Egypt to Syria have been dealt with in the publications of Rebel, Zerny, Osthelder <sup>(4)</sup> and Wiltshire himself.

If we view the eremic subregion, in its entirety, it may be said at present that only the vast areas of the Central Asiatic deserts are still closed to our knowledge. the few records from there do not give us a general picture. But two facts are already discernible, cannot be altered by any further explorations :

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<sup>(3)</sup> Cf. the first publication of the author on Brandt's splendid collections of Microlepidoptera from Iran, in this Bulletin, pp. 227-269.

<sup>(4)</sup> After Osthelder's name should be added, with particular reference to Palestine, the name of Dr. Amsel himself ! (E.P. Wiltshire).

(1) The great wealth of species of the desert fauna, in contradiction to the general views of the desert as unfavourable "territory".

(2) The quite striking differentiation of the various desertic areas.

As soon as we shall have attained the necessary certainty on the systematic publications, it will be a very remunerative task to evaluate those above two facts in their entirety, within a general zoogeographical analysis, and to bring them in relation to the corresponding conditions of the other subregions of the Palaearctic. There will no doubt result highly surprising and interesting problems which will represent a decisive enrichment of the zoogeographical and general biological researches.

These few lines may suffice to indicate the importance of Wiltshire's collections.

The study of the material was first taken up by Meyrick, but was soon interrupted through the death of Meyrick in 1938. Unfortunately, Meyrick described the species he considered to be new, in his "Exotic Microlepidoptera, vol. V", without consulting other specialists. Thus of the 49 species he described no less than 16 have to be cancelled as synonyms. These synonymies are published partly in this paper, partly in my paper "Ueber alte und neue Kleinschmetterlinge aus dem Mittelmeergebiet" (*Veröff. Kol. Mus. Bremen*, Bd. 3, Heft 1, pp. 37-56, 1940). It was fortunate that Mr. E.P. Wiltshire submitted all the species determined by Meyrick to me for study, in order that at the same time as the types these other identifications might be checked. A check was urgently needed, for most of the determinations proved to be wrong !

My own determinations were effected in most cases by examination of the genitalia in order to obtain the greatest possible certainty. Surprising and interesting results were thereby obtained in many cases, especially on examining the species of *Eromene*, the *desertellus*-group of *Crambus*, the species of *Ancylolomia*, etc. "Bonae species" and systematic affinities could thus be recognized which would not have been possible without the examination of the genital armature. These instances revealed again how absolutely necessary such an examination is, if the systematic work is to be really thorough and above criticism. Of all Meyrick's species the genital armatures were examined and drawings of them made, so that of the enormous amount of Meyrick's new descriptions at least the Mesopotamian species are now interpretable with certainty.

On the habitats of the species, Wiltshire has made quite extensive notes in his publications: "Mesopotamian desert Lepidoptera" (*Journ. Bombay Nat. Hist. Soc.*, XLII, pp. 829-831, 1941), the introduction to his Bulletin (1944) mentioned below, and "Studies in the Geography of Lepidoptera, IV" (*Tr. R. Ent. Soc. London*, 96, pp. 163-186, 1946). Since

not all the readers may have these papers at hand, the most essential details may be repeated, as follows :

Ahwaz, 250 feet, in Khuzistan, South West Iran; Amadia, 4000 feet, in North Kurdistan, Irak (mountains); Bagdad, 100 feet, Irak; Basra, South Irak, 50 feet and less; Berserini, 4000 feet, Kurdistan, Irak (Zagros mountains); Diana, ca. 3000 feet, near Rowanduz in Kurdistan, Irak (Zagros mountains); Jebel Darwishika, 750 feet, east of the Tigris, Irak (desert foot-hills); Kerbela desert, 600 feet, chief collecting area 150 miles west of the town Kerbela (south of Bagdad); Maidan-i-Naftun, 1000 feet, South-West Iran (desert foot-hills); Mosul, 700 feet, upon the Tigris, Irak; Mosul desert, 1200 feet, mostly between Jebel Sinjar and North Kurdistan, Irak; Qaraghan, 500 feet, east of the Tigris, Irak (desert foot-hills); Rayat, 5000 to 9000 feet, Kurdistan, Irak, ca. 20 km. from the Iranian frontier, Zagros mountains; Salehabad, ca. 750 feet near Dizful, South-West Iran (desert foot-hills); Ser Amadia, 6000 feet, Kurdistan, Irak, close to the Turkish border (mountains); Shaqlawa, ca. 3000 feet, Kurdistan, Irak (Zagros Mountains); Sheikaadi, ca 1000 feet, north-east of Mosul (foot-hills); Sulaf, 4000 feet, North Kurdistan, Irak (mountains).

There are very few publications on the Microlepidoptera of Mesopotamia viz. <sup>(5)</sup> :

(1) Rothschild : Noctuidae, Lemoniidae and Pyralidae in : Moths of Mesopotamia and North West Persia (*Journ. Bombay Nat. Hist. Soc.*, XXVIII, pp. 170-183, 1921). This, the hitherto most comprehensive paper on Mesopotamian Micros enumerates 54 Pyralidae from both countries, amongst them the descriptions (mostly inadequate) of 10 new species or subspecies.

(2) Schawerda, K. : Neue Arten und Formen aus Mesopotamien (*Verh. Zool.-Bot. Ges. Wien*, 73, pp. 158-163, 1923). This describes two new Pyralids and a new Tortricid, as well as a number of new Macrolepidoptera.

(3) Meyrick, E: Exotic Microlepidoptera, vol. II (1916-1923). Contains the descriptions of 6 new species from Mesopotamia and 2 from Iran. Vol. V (1936-1937) gives the descriptions of 49 new Mesopotamian species.

(4) Wiltshire, E.P. : The butterflies and moths of Irak. Bagdad 1944 (Government of Irak, Ministry of Economics, Directorate-General of Agriculture, Bull. No. 30, pp. 1-101). Though this paper only deals with Macrolepidoptera, it enumerates in an appendix 5 Microlepidoptera.

Of new genera and species, there are erected in this paper :

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<sup>(5)</sup> The hitherto published literature on Iranian Microlepidoptera is cited in the paper of the author, quoted in the former foot-note.

**Pyralidae**

*Crambus stenopterellus* spec. nov., *Eromene rayatella* spec. nov., *Ancylolomia irakella* spec. nov., *Tollia* gen. nov., *Chiloides* gen. nov., *Ancylodes kerbelella* spec. nov., *Heterographis concavella* spec. nov., *Ahwazia* gen. nov., *Ahwazia albicostalis* spec. nov., *Tephros stenopterella* spec. nov., *Salebria coremetella* spec. nov., *Epischmia arabica* spec. nov., *Eudoria* (*Scoparia*) *piroformis* spec. nov., *Bostra atomalis* spec. nov., *Bostra minimalis* spec. nov., *Lepidogma wiltshirei* spec. nov., *Constantia wiltshirei* spec. nov., *Krombia pulchella* spec. nov., *Usgentia* gen. nov., *Tegostoma mossulalis* spec. nov., *Tegostoma ahwazalis* spec. nov., *Kerbela* gen. nov., *Kerbela monotona* spec. nov.

**Pterophoridae**

*Agdistis bagdadiensis* spec. nov.

**Tortricidae**

*Semasia bagdadiana* spec. nov.

**Atychiidae**

*Atychia mesopotamica* spec. nov.

**Gelechiidae**

*Depressaria mesopotamica* spec. nov.

**Oecophoridae**

*Pleurota kerbelella* spec. nov., *Pleurota wiltshirei* spec. nov., *Symmoca costobscurella* spec. nov., *Symmoca kalifella* spec. nov., *Wiltshireia* gen. nov., *Wiltshireia alba* spec. nov.

**Scythrididae**

*Scythris bagdadiella* spec. nov., *Bagdadia* gen. nov., *Bagdadia irakella* spec. nov., *Metzneria diamondi* spec. nov.

**Tineidae**

*Hapsifera asiatica* spec. nov., *Hapsifera kerbelella* spec. nov., *Tinea irakella* spec. nov.

Altogether 7 new genera and 33 new species are described. All types are in the collection of Mr. Wiltshire, paratypes also in my own collection.

Of the species described by Meyrick, the following could be identified as synonyms and have, therefore, to be cancelled.

*Salebria amphipyrrha* Meyr. = *Psorosa ochrifasciella* Rag., *Salebria isoxyla* Meyr. = *Salebria dionysia* Z., *Nephopteryx diplocapna* Meyr. = *Sale-*



*bria komaroffi amanella* Zy., *Epischnia gypsocrates* Meyr. = *Epischnia lydella* Led., *Pristophora atmologa* Meyr. = *Salebria sordida* Stgr., *Euzophora xylo-morpha* Meyr. = *Euzophora pulchella* Rag., *Pistogenes mercuria* Meyr. = *Euzophora subscribella* Rag., *Trissonea ischnopis* Meyr. = *Heterographis oblitella* Z., *Oeobia haemopsamma* Meyr. = *Pyrausta praepetalis* Led., *Cirrhochrista phthoneropsis* Meyr. = *Metasia virginalis* Rag., *Leptarchis psologramma* Meyr. = *Epistensia intervacatalis* Chr., *Aglossa caescripta* Meyr. = *Crocalia aglossalis* Rag., *Noctuelia baryscia* Meyr. = *Emprepes russulalis* Chr., *Pleurota alexandrina* Meyr. = *Pleurota generosella* Rbl., *Cronodora stichograptia* Meyr. = *Myrmecozela diacna insignis* Ams., *Aratescetes endoperca* Meyr. = *Apiletria purulentella* Stt.

Apart from these 16 species the following species should be cancelled, as they were erected upon too badly preserved specimens :

*Neoschoenobia eoa* Meyr., *Trissonca crocodoxa* Meyr., *Coleophora cerinaula* Meyr., so that of the 49 new species of Meyrick, 19 should be deleted.

## B. SYSTEMATIC PART <sup>(6)</sup>

### PYRALIDAE

#### (1) *Arenipses sabella* Hb.

Bagdad, 23.iii., 2-29.iv. (oasis).

#### (2) *Lamoria anella* Schiff.

Bagdad, 25.x. (oasis) ; Ahwaz, 24.iv., 3.v. (oasis).

#### (3) *Crambus paludellus* Hb.

Basra, 25.v. (oasis) ; Ahwaz, 2.v. (oasis).

#### (4) *Crambus heringi* Ams.

Ahwaz, 16.x. (desert) ; one female of 27 mm. wing expansion, i.e. very large and at the same time with exceptionally faded design. The species was known only from Palestinian dunes.

#### (5) *Crambus cyrenaicellus* Rag. (= *permixtellus* Klobhg.).

Mosul, 11.x., one female.

<sup>(6)</sup> With Dr. Amsel's permission I have added to his text a few details from my own diary regarding the capture of these moths, in order to shew not only the date and locality (which Dr. Amsel has noted from my labels) but also, where it could be precisely given, the biotope or ecofauna, and, where known, biological details, and even, in one case, the photo of a larva. The descriptions of larvae however I have put in foot-notes (E.P. Wiltshire).

**(6) *Crambus desertellus* Led.**

In size, habitus and markings agreeing fully with *desertellus* Led., but the species varies extraordinarily in the male genitalia. Both figures 1 and 2 in Plate I show extremes thereof. A later publication will deal at greater length with the variability of the genitalia of this and other *Crambus* species.

The records on the distribution of *desertellus* need re-examination of the genital organs, as it has been proved, that in this group several species, as in the *craterellus*-group, cannot be separated exteriorly. Also *siculellus* is very similar, but genitaliter completely different, for this species has no strongly produced vinculum.

Localities : Mosul, 11.x.36 (Prep. 470) ; Diana, 6.x.36 (Prep. 468) ; Berserini, 9.x., 7 specimens, mostly in bad condition.

**(7) *Crambus stenopterellus* spec. nov. (Plates I and XII, figs. 3 and 83).**

Expansion 24 mm. Fore wings very narrow, sand-coloured, a dark spot in the middle of the fold, a smaller one at the cell-apex, a curved transverse line, darker interiorly, paler exteriorly, at 5/6. Hind wings pale grey.

The species is very remarkable by its very narrow fore wings, agreeing here in with *bolivarellus* Schmidt, to which the species is somewhat similar. The cross-band runs, however, more obliquely and is more strongly angular, in *bolivarellus*. In *stenopterellus*, it is rather perpendicular to the fore margin, at 5/6, and very soon bends in a rounded angle towards the interior margin, not wholly attaining it, and thus benignly nearly parallel to the exterior margin. The spot in the middle of the fold is larger than that at the cell-apex, the latter situated in a small, paler area. The marginal points are very weak. The hind wings are uniformly pale grey. Palpi long, protruding, four to five times as long as the diameter of the eye, unicolorously grey brown, only at the under side somewhat paler. Antennae very finely setose, the single setae at most one-fourth as long as width of joints, agreeing in this with *bolivarellus*, *desertellus* and *siculellus*.

Genital armature of male : Uncus a pointed hook, gnathos beak-shaped. Costa of valvae with two stout teeth, vinculum sinuated, aedeagus with sharp tooth at apex (Prep. 469).

Locality : Mosul, 10.x.36, one male.

**(8) *Eromene ocella* Hw.**

Kerbela desert, 28.iii ; Jebel Darawishka, 14.xi. (desert) ; Bagdad, 19.ix. (oasis) ; Ahwaz, 22.iv.

**(9) *Eromene bahrlutella* Ams.**

Ahwaz, 7.x., one male (Prep. 316).

**(10) *Eromene bella* Hb.**

Rowanduz, 8.x. (Prep. 332); Diana, 16.vi.; Berserini, 9.x. (wooded or deforested mountain); Ser Amadia, 14.viii. (peak).

**(11) *Eromene islamella* Ams.**

Bagdad, 3.iv., 5.v. (Prep. 324), 10.v. (Prep. 325, 327) (oasis); Qaraghan, 13.iii.

**(12) *Eromene* (?) *pulverosa* Chr.**

One specimen without abdomen, the determination of which is not quite certain, but very likely correct. Rayat, 24.vi.

**(13) *Eromene rayatella* spec. nov. (Plate I, fig. 4).**

*Expansion 17 mm. Fore wing greyish brown, with straight median band and seven thick marginal dots.*

The species is lurid grey in its ground colour, basal area sparingly set with dark brown scales, more densely in the posterior area. Median band yellowish, more intensively yellow than in *keredjella* Ams., margined with brown; it is situated in the middle of the costa from there running perpendicularly to the interior margin which it meets rectangularly at  $3/4$ . The pale accompanying band, interiorly, is indistinct but running through from the costa to the interior margin. The double band is broad, the upper branch enlarged at the costa. The black marginal dots on slightly yellowish ground are rather thick, the first at the inner angle very small, nearly wanting. Above the marginal dots, the margin is dull silvery up to the apex, the rather sharply defined band before it yellowish brown. It follows (viz. from the tip inwards) a white costal line, then a brown one of the same width, the inferior part of which is connected with the broad, brown (filled with yellow) cross-band, behind the upper branch of the double-line. Between both is a small whitish costal hooklet. The tip of the wing is, therefore, not testaceous as in *superbellus* Z.. Hind wings grey-yellowish, finely darker margined, fringe as the disc. Palpi two and one-half as long as the diameter of the eye, brownish, last joint darker grey. The two first joints are whitish beneath. Thorax, shoulder-angles and abdomen as fore wings. On the under side, the three median, black marginal dots of the upper side are distinctly visible, the others indistinctly so. The wing is unicolorously yellow-grey, only a fine marginal line paler. Hind wing somewhat paler.

Genital armature of male: Very similar to *keredjella* Ams., but sacculus considerably longer, attaining up to  $3/4$  of the length of the valvae. Uncus narrowed towards apex, vinculum rounded, somewhat pointed. Aedeagus similar to *keredjella*, but cornuti wholly different. Their shape may

best be seen from the figure. The small thorn of the valval costa deeply dark chitinized.

Locality: Rayat, 13.vii., one male.

The species belongs in the nearest relationship of *keredjella* Ams., but is distinctly different in both, the genitalia and the markings as well. From *superbella* Z., the species differs by the lack of a spot-like darkening without yellowish centre, as *superbella* shows it at the end of the median cell of the fore wing. *E. zonella* also has such a spot, but with yellowish centre, besides, 9 marginal points. The other species, as *ocellea* Hw., *bella* Hb. or *anapiella* Z., have 9 dots at the margin, *joiceyella* Schmidt and *bahrutella* Ams. have only 6. Unfortunately, the descriptions of *gratiosella* B.-H., that Turati mentions from the Lob-Noor and from the Cyrenaica, and *luciella* Chrét. (*Le Naturaliste* 29, p. 178) from Languedoc are not at my disposal, so that these species could not be dealt with as to their systematic position.

**(14) *Talis quercella* Schiff.**

Samarra, 13.x., one female (desert).

**(15) *Ancylolomia palpella*-group.**

The determination of the species of the *palpella*-group still presents serious difficulties. As long as the true *palpella* and the new species belonging here are not elucidated by the examination of the genital armature, the determination of the material from Iran and Irak is not yet possible. The various species are not only very similar superficially, but also in their genital organs. The material very likely contains three species, one of which is remarkable by its extremely short palpi, which, however, strangely enough, cannot be genitaliter separated from another species from Spain, having normal palpi. Only with rich material from different areas it will be possible to solve these difficult questions.

**(16) *Ancylolomia irakella* spec. nov. (Plate II, fig. 13).**

In size, design, form of antennae and palpi agreeing with *tentaculella* Hb., but distinctly differing in the male genitalia (Prep. 483a).

The valvae are narrower, the basal break (K) present in *tentaculella* (Plate III, fig. 14), is wanting in *irakella*, as well as is the strong pubescence. The gnathos is still stouter, heavier, and the uncus, formed like the head of an eagle with its neck bent backward (almost perpendicularly broken in *tentaculella*), is more strongly pointed. Aedeagus not spherically rounded at base, but bent inward and pointed.

Locality: Diana, 6.x.36, one male.

All previous records on the distribution of *tentaculella* have to be revised.

**(17) *Ancylolomia pectinatella* Z. (Plate III, fig. 15).**

Mosul, 10.x.; Hamidiyah near Ahwaz, 14.x.

The examination of the genital armature has surprisingly revealed the fact that this species does not at all belong to *Ancylolomia*. While *Ancylolomia* is characterized by a simply pointed, bird-head-like uncus, *pectinatella* has a tricuspidate, wholly differently built uncus. Gnathos, valvae and aedeagus, too, are so completely different that a new genus has to be erected. I am introducing it as *Tollia* gen. nov. naming it thus after the eminent Lepidopterologist Count S. v. Toll.

Further differences in the venation, the shape of the antennae or palpi do not exist, and also the habitus fully agrees with that of *Ancylolomia*. The more remarkable is the wholly different genital armature. I may remark that a specimen, labelled *Ancylolomia syriaca mesopotamica* Rbl. (ex coll. Schawerda) from Mosul is undoubtedly for reason of its genitalia: *A. pectinatella*. Should the determination of this specimen as *mesopotamica* Rbl. be correct, this subspecies (originally described as a "good" species) would have to be considered as a synonym to *pectinatella*. By the examination of the genitalia of the species *tentaculella* Hb., *disparella* Hb. and *tripolitella* Rbl., I was able to ascertain that they are all *Ancylolomia*, and that they have nothing to do with *Tollia*.

**(18) *Anerastia ablutella* Z. (? = *Syria agraphella* Rag.).**

Bagdad, 31.v., 2.vii.; Kerbela desert, 28.iii.; Mosul, 11.x.; Khanikin, 7.xi.; Darawishka, 14.x.

From Dumont's collection in the Paris Museum, I received a specimen, labelled *Syria agraphella* Rag. from Algeria, which has resulted to be a doubtless *A. ablutella*, after examination of the genitalia. If the determination of this specimen as *agrappella* is correct, this species falls into synonymy. This is very likely so, for *agrappella*, as the figure given in Ragonot's monograph shows, is very similar to *ablutella*. The genera *Anerastia* and *Syria*, however, have nothing in common, because *Syria* has a smooth frons, while *Anerastia* cannot be confused because of its large frontal projection; though it is still possible that Ragonot, on describing his *agrappella*, has overlooked this character.

**(19) *Emmalocera leucosarca* Meyr. (Exot. Micr. V, p. 65) (Plate III, fig. 16).**

Rayat, 14.vii., one female (type).

The type, unfortunately is covered with mould, and generally not very well preserved. A "suffused white pointed costal stripe from base to near



apex" is hardly noticeable. On the contrary, the insect gives the impression of having been pale testaceous and entirely devoid of markings, with slight pinkish scale covering longitudinally. The protruding, drooping palpi are also suffused with pink on an ochrous ground.

**(20) *Schoenobius gigantellus* Schiff.**

Bagdad, 1.iv.; Ahwaz, 2.v.

**(21) *Schoenobius alpherakii* Stgr.**

Ahwaz, 8-22.iv., 3-23.v., and 18.ix.

**(22) *Diatraea* (Chilo) *luteella* Motsch. (Plate I, fig. 6).**

Rowanduz, 25.ix.35, one male (det. Meyrick).

The differences between this species and *Crambus hierichunticus* Z., often confused with it, are given by Meyrick, in: Ellison and Wiltshire, Lepidoptera of the Lebanon (*Trans. R. Ent. Soc. London*, 88, p. 50, 1939). In order to recognize this species, the illustration of the genitalia may be referred to: Uncus somewhat shorter than gnathos. Costa of valvae at base protruding exteriorly. Aedeagus without cornuti, edged at tip (Prep. 471).

**(23) *Chiloides hederalis* Ams. (Plate I, fig. 5).**

Hamidiyah near Ahwaz, 14.x. (Prep. 418a); Ahwaz, 3-30.v.; Basra, 25.v.

With regard to the systematic position of this species, known hitherto only from Palestine (*Hedera*), the examination of the genital armature (Plate I, fig. 5) shows that it belongs near *cicatricellus* Hb. This latter species, however, should be removed from the genus *Chilo*, and a new genus erected for it viz., *Chiloides* gen. nov.

Characteristic is the exceptionally high differentiation of the valvae which are in *phragmitellus* Hb., the genotype of *Chilo*, quite simple. Like *hederalis*, *cicatricellus* has a long, slender, hook-like projection at the upper margin of the valvae. This process may be considered as special character of *Chiloides*. In the venation of the fore wing, *Chiloides* is characterized in having r1 running straight into the fore margin, whilst r1 is decidedly bent before the costa in *Chilo*. There are no other differences in the venation. The illustration of the genitalia, given in my paper "Neue palästiniensische Lepidopteren" (*Mitt. Zool. Mus. Berlin* 20, Taf. 15, fig. 18) is insufficient — owing to the missing aedeagus — and moreover wrong, because the valvae are not drawn correctly. I am giving, therefore, a new exact illustration.

**(24) Neoschoenobia eoa Meyr. (Exot. Micr. V, p. 28).**

Rayat, 27.vii., one male (type).

The single specimen at hand was unfortunately badly damaged during the war, as the left wings were nearly wholly eaten by wood-lice, the abdomen is almost wholly missing, and the originally badly preserved right half of the specimen partly rubbed off. Recognizeable are still the faint pink lines on dull yellow ground, the antennae are very slightly pubescent, the palpi are nearly completely rubbed off, the stemmata are distinct, the scale covering of head and thorax is wholly wanting. The venation of the fore wing is complete: r2 originating immediately near the very long-stalked r3+r4. r5 commences freely and runs into the margin before apex, m1 far from m2. Hind wing: rr stalked at on sc, m1 coming right from the base of the wing, m2 and m3 closely approximated. The cell runs up to half of the wing.

If the species may be recognized again by this poor condition of the type, is very doubtful; it would not do much harm simply to cancel it.

**(25) Thyridophora furia Swinh.**

Rowanduz, 28.viii.; Kerbela desert, 1-4.v.

**(26) Ancyloides kerbella spec. nov. (Plate II, fig. 10).**

See pl. leg. h. errata in Vol. 34 p. 1509

*Exp.* 20-24 mm. Fore wings grey, with dark scale covering on and between veins. On the analis near  $1/3$  and  $3/4$  a scarcely indicated dark dot each.

The species comes near to *fuscovenella* Rag., *pallens* Rag., *staminella* Chr. and *nervosella* Zy. It differs from *fuscovenella*, described from Kuldja, and 27 mm. large, by its much smaller size and much less conspicuous dots on the analis; from *pallens* Rag., with which it agrees in size, by the faintly indicated analis dots that are entirely wanting in *pallens*, and by the totally different genital armature (Plate II, figs. 8 and 9); from *staminella* Chr., by its not white but grey ground colour, and from *nervosella* by the much less conspicuous veins. Besides, *nervosella* has antennae, the pubescence of which attains  $2/3$  the length of the diameter of the joints. In *kerbella*, the antennae are very slightly pubescent, they appear practically bald. Fore wings and thorax are pale grey, not yellowish covered with darker scales more or less strongly on and between the veins. The costa, too, does not remain free from these dark scales. The more basally situated dot on the analis is mostly somewhat more distinct than the second one, but both are very weak and may be wanting. The palpi are pale grey, the small terminal joint is drooping. The hind wings are pale grey, slightly iridescent, somewhat darkened at the margin. Abdomen grey,

the dorsal spot of *nervosella* Zy. is wanting. On the under side, both pairs of wings are evenly pale grey, shining.

Genital armature : Costa of valvae incrassate only up to the middle, not surpassing the outer margin as small point, as in *pallens*. Coremeta consisting of a pair of non-modified hair-scales. In *pallens*, the coremeta is very conspicuous and much differentiated.

Locality : Kerbela desert, 27.iv.-6.v., numerous; mostly bad specimens.

**(27) *Saluria maculivittella* Rag.**

Bagdad, 31.v.; Kerbela desert, 11.iv.; Ahwaz and Hamidiyah, 23.iv., 7.30.v., 23.ix., and 6.x.

**(28) *Cornigerula eremicola* Ams. (Plate II, figs. 11 and 12).**

Nejf, 26.iii., four females.

To this species, hitherto only known from the southern end of the Dead Sea, I am referring to the genital armature which has not been described before. The vinculum is long, nearly rectangular, the uncus slender, aedeagus long and fine, the valvae are particularly apparent by a mobile chitinous rod, that starts in the middle (indicated in the figure by an arrow). During mounting, this rod is very apparent, later, in the preparation, this is less the case. Remarkable is furthermore the chitinous scale of the last segment. It bears a stout tuft of long hairs or scales, on either side.

**(29) *Heterographis concavella* spec. nov. (Plates II and XII, figs. 7 and 84).**

*Exp.* 11-14 mm. *Fore wings* pale ochreous, with orange, usually slightly concavely curved cross-band at 1/4, which is accompanied exteriorly by a white band that fuses into the wing. *Margin* narrowly brownish orange. *Fringe* whitish.

This pretty species is well characterized by the mostly concavely arched cross-band at 1/4. In some specimens, this band is almost straight. It is sharply defined exteriorly, and fuses gradually into the pale ground colour. The white band, following immediately the orange-coloured one, is very narrow. A terminal cell-dot is wanting. The margin is narrowly brownish to orange. Fringe without partition-line, whitish. Hind wings transparent, very pale, nearly iridescent, wholly uniform. Palpi very pale. Under side of fore wings without markings.

Genital armature of male conspicuous by its valvae. These bear at the base of the upper edge a thin pedicel that fuses into a thickening. Aedeagus long and slender.

Localities : Bagdad, 11.iv.; Kerbela desert, 28.iv., 2-31.v.; Ahwaz, 20.iv. and 16.x., 17 specimens.

The species belongs near to *convexella* Led. and *monostictella* Rag. In both species, however, there is a second cross-line present, parallel to the exterior margin. It may be especially emphasized that *convexella* belongs to the genus *Heterographis* and not to *Trissonca*, because the veins m2 and m3 issue from one point.

(30) ***Heterographis hellenica* Stgr.**

Mosul, 31.v. and 21.vi.; Ahwaz, 5.x.

(31) ***Heterographis convexella* Led.**

Bagdad, 17.xi.; Kerbela desert, 21.v.; Mosul, 11.x.; Diana, 31.vii.

(32) ***Heterographis harmoniella* Rag.**

Kerbela desert, 28.iii.

(33) ***Heterographis subcandidatella* Rag. (? = *gracilella* Rag.).**

Bagdad, 23.iii., 31.v. and 2.vii.; Kerbela desert, 31.iii. and 15.v.; Qaraghan, 13.iii.; Maidan-i-Naftun, 5.v.; Ahwaz, 10.v., 15-30.viii., 18.ix. and 16.x.

This species varies considerably in size and pattern. A male specimen at hand from the Dumont collection of the Museum Paris, from Algeria, labelled *H. gracilella* Rag., is identical with this species, which was proved by examination of the genital armature. Should the determination of this specimen of *gracilella* be really correct, which is rather likely, as Dumont seems to have compared his material with Ragonot's collection, *gracilella* and *subcandidatella* would be identical.

(34) ***Heterographis candidatella* Led.**

Bagdad, 31.v.; Kerbela desert, 1.v.; Ahwaz, 6-28.iv. and 26.ix., common.

(35) ***Trissonca (Heterographis) muliebris* Meyr. (Exot. Micr., vol. 5, p. 70).**

Mosul, 21.viii., one female (type); Maidan-i-Naftun, 5.v., one female.

The white costal streak is not sharply defined towards disc, but is fused with it. The exterior, nearly straight, cross-band is only slightly visible, or nearly wanting. The species is extremely similar to *Staudingeria minimella* Luc., but seems to be specifically different. Of *minimella*, I have unfortunately only males.

(36) ***Trissonca oblitella* Z. (= *Trissonca ischnopsis* Meyr.).**

Diana, 20.vi.; Bagdad, 3.vi. (oasis); Mosul, 1.vi.

**(37) *Trissonca ?aegyptiacella* Rag.**

Bagdad, 18.iii., one male having only both left wings, identified by Meyrick. As I have no absolutely certain specimens of this species, I had to put the query.

**(38) *Trissonca crocodoxa* Meyr. (Exot. Micr. V, p. 71).**

Ser Amadia, viii.35, one female (type) in very bad condition, in this state wholly inadequate for the erection of a new species. It has to be cancelled.

**(39) *Trissonca polycapna* Meyr. (Exot. Micr. V, p. 71).**

Ser Amadia, viii.35.

There is only the female type present. The specimen is in bearable condition. The species is rather without markings. The fore wings are brown, margin outside second cross-band paler, first band practically wanting. The costal line from base to apex scarcely conspicuous. Hind wings uniformly grey. Without comparison with the type, this species may not be recognized again, in this difficult genus.

**(40) *Ematheudes vittelinella* Rag.**

Bagdad, 31.v.; Ahwaz, 8-25.iv.

**(41) *Anoristia gilvella* Rag.**

Nejf, 26.iii.; Kerbela desert, 28.iii.

**(42) *Auxacia bilineella* Rag.**

Mosul, 21.vi.; Kerbela desert, 28.iii.; Ahwaz, 8.x. (desert, flying by day).

**(43) *A h w a z i a* gen. nov.**

Glossa conspicuous, palpi bent upward, attaining middle of frons, rather adpressedly covered with scales, ultimate joint half as long as second, less densely set with scales. Maxillary palpi as joint 3 of labial palpi. Frons without peculiarity. Antennae filiform, not pubescent. Venation of fore wing:  $r_3 + r_4$  with long pedicel, as  $m_2 + m_3$ . Hind wing,  $m_3$  and  $cu_1$  quite shortly pedicellate.

Genital armature of male: Uncus rounded, gnathos slender and pointed, the ring bearing it with one pair of long branches (A). Valva widened exteriorly, costa thickened up to the beginning of the outer margin. Aedeagus heavy, without cornuti.

The position of the genus in the Phycitinae is yet uncertain. It belongs in the group having trifid venation of hind wing.



**Ahwazia albocostalis spec. nov. (Plate III, fig. 17).**

*Exp.* 18 mm. *Fore wings* with brownish wood-coloured ground colour, with whitish costa up to right before tip and with pale, little apparent terminal cell-spot. *Hind wings* grey. *Under side of fore wings* without design, somewhat darker than hind wings.

The whitish costa is not quite sharply defined, ending right before tip, remaining rather evenly wide. The brownish ground colour is somewhat fused with paler scales. Fringe grey-brown, with darker basal line.

*Locality* : Ahwaz, 16.x. (desert), one couple (types); Qaragan, 13.iii. (desert), one male (Prep. 485 a). Both localities were in between low desert foot-hills.

**(44) Staudingeria adustella Rag. and f. kebiliella Luc.**

The typical form from Bagdad, 7.x. (rather dry oasis), f. *kebiliella* from Ahwaz, 16.x. (desert) and Kerbela desert, 27.iii.

**(45) Syria biflexella Led. (= pilosella Z.).**

Ahwaz, 16.x.

**(46) Pristocera solskyi Chr.**

Rayat, 27.vii., several specimens.

**(47) Pristophora nigrigranella Rag.**

Kerbela desert, 15.vi., one male.

**(48) Pristophora alphetopis Meyr. (Exot. Micr. V, p. 72) (Plate III, fig. 18).**

Rayat, 27.vii.35, the male type.

The species wholly without markings. The fore wings are quite uniformly pale ochrous, fringe little paler. Hind wings whitish, somewhat transparent. Palpi ochrous as fore wings, last segment very small. Under side of fore wing but little darker than pale hind wings.

*Genital armature* : Uncus broad, upper margin slightly emarginated. Gnathos forming a large, oval structure, ending in one small point above and two beneath. Valvae of the type with left and right side somewhat differently built. Right valva : Upper edge thickened, ending in a digitiform formation. Exterior margin rather straight. Lower edge thickened up to the middle. Left valva with convex exterior margin. Vinculum broadly rounded, aedeagus broad, cylindrical, with long, stout, rod-shaped cornutus.

**(49) Pristophora oxycyma Meyr. (Exot. Micr. V, p. 73).**

Rowanduz, 15.vi., one female (type).

The indistinctly marked species may not be recognized again after

Meyrick's description only. It is also not well defineable by an illustration. As the male is not known yet, we have to wait until it will be found, in order to give an illustration of the genitalia. The coloration really consists only of a mixture of pale grey and pale black. Markings are hardly developed. There are traces visible of an exterior cross-line, in addition, two very small dark dots at the upper and lower end of the cell. Head, thorax, palpi and legs as fore wings. Hind wings are darkened towards margin and especially towards apex, otherwise pale, nearly transparent.

(50) **Zinckenia fascialis Gr.**

Bagdad, 25.x. and 16.xi.

(51) **Psorosa nucleolella Möschl.**

Bagdad, 31.v.

(52) **Psorosa dahliella Tr.**

Ser Amadia, xiii.35.

(53) **Psorosa ochrifasciella Rag. (= Salebria amphipyrrha Meyr.).**

Diana, 28.vi.

(54) **Candiope uberalis Swinh. (= Pristophora discomaculella Rag.).**

Mosul, 11.x.; Kerbela desert, 2.v.; Hamidiyah and Ahwaz, 7-14.x.

(55) **Candiope pseudodiscomaculella Ams.**

Mosul, 11.x.

Hitherto known only from Palestine.

(56) **Hyphantidum (Cateremna) albicostale Wlk.**

Diana, 19.v., one female (det. Meyrick).

I could not prove, if this identification was correct, as I could compare this species, known from India, Ceylon and Celebes, only with the description in Ragonot's monograph.

(57) **Euzophora lunulella formosella Rhl.**

Kerbela desert, 4-15.v.

(58) **Euzophora pulchella Rag. (xylomorpha Meyr.).**

Rayat, 27.vii. and 14.ix.; Ser Amadia, ix.1935.

(59) **Euzophora subcribrella Rag. (= Pistogenes mercatrix Meyr.).**

Bagdad, 18.iii. (oasis); Kerbela desert, 27.iii., common.

**(60) *Euzophora lactiflora* Meyr. (Exot. Micr. V, p. 72).**

Mosul, 21.viii., one specimen without abdomen.

This ivory-coloured species has very little markings. As an exterior band, there are, parallel to margin, some dark scales, which are only loosely connected and form an undulated or zigzagged line. In the middle of the interior margin and above in the fold, a few more scales. Hind wings almost of the same colour but more grey. Under side of fore wings darker than that of hind wings. Head, thorax and palpi as fore wings.

**(61) *Phycita diaphana* Stgr.**

Bagdad (oasis), hatched 17.xi. ex larva *Populus euphratica*; also ex larva *Ricinus*, full-grown xi.37, hatched 22-24.iv.38; also to light, 28. ix.; another, hatched 9.iv.37 (?) from larva found at Gebel Darawishka on *Crozophora verbacifolia*, 8.xi.36; also to light, 14.ix.36, Jebel Darawishka (desert).

Nearly wholly agreeing with the types of Standinger from Malaga.

**(62) *Phycita eremica* Ams. (= *Salebria aciculata* Meyr. in litt.).**

Bagdad, 13.x., hitherto known only from Palestine.

**(63) *Ptyonocera proteroleuca* Meyr. (Exot. Micr. V, p. 65) (Plates V and XII, figs. 32 and 89).**

Rayat, 14.ix.35, one male (type).

The genital apparatus of this species is very complicated and highly differentiated. Uncus semicircular, from the upper portion of the tegumen, a long, chitinous thorn (S of the drawing) extends downward. The valvae are not quite symmetrical. Clasper of valva is pointed at the left side, rounded at the right side. The stout, thick aedeagus has dorsally a helmet-shaped, dentate crista (K), as well as some not symmetrical chitinous plates. The coremeta only consists of one pair of not differentiated, rather long tufts of hairs. The design is simple: an indistinct, nearly straight cross-

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(?) Larvae on *Crozophora verbacifolia*, 8.xi.36, were paler-coloured than those on *Ricinus*, 3.xi.37. The former were pale olive grey with yellowish joints and mottled olive-green wavy longitudinal lines; subdorsal dots and spiracles, black; head pale brown, with black markings, or brown markings; in the former case, thoracic plate is also black. The head is large, the body tapering to the rear. They spun up in cocoons of leaf-fluff among eaten-out bracts of the foodplant, and over-wintered in the pre-pupal state. The 1937 larvae were blackish or purple grey; on somite 2, four white-centred black dorsal tubercles. Dorsal and subdorsal lines, double, whitish, wavy. Length, 1/3 inch. A paler form on the same foodplant was ochreous-pink, without black head, thoracic plate or tubercles, though the subdorsal dots were blackish, small and faint, and white-circled. These lived on flower-heads of castor, where they lurked in silken tubes covered with frass (E.P. Wiltshire).

band at 1/3, most conspicuous at the costa, an arched, second cross-band at 5/6, being narrower and more conspicuous than the first cross-band. Between both bands, the costa and the adjoining part of the wing is set with rather dark scales, towards inner margin, the wing becomes paler. Hind wings uniformly grey. The antennae have a scale callus on the basal joint, but are otherwise very finely, scarcely visibly pubescent, the palpi are bent in a quadrant, pale and dark grey fused. The type is of moderately good condition.

- (64) *Ichorachis iozona* Meyr. (Exot. Micr. V, p. 66) (Plates V and XII, figs. 30, 31 and 85).

Diana, 28.vi.35, one male (type).

Basal area sharply defined, exterior cross-band conspicuous only in its upper part, fading out towards interior margin. The two terminal cell-dots are little apparent. Ground colour pale grey, with a slight pinkish hue. Hind wings pale grey, margin darker.

Genital armature : Valvae with thickened costa and clasper-like protuberance (Cl.), bent, sharply pointed. Gnathos (G) inversely pear-shaped. A very complicated, paired organ, that I cannot identify, is situated between the aedeagus and gnathos and bears on its apex a pair of bristly heads (K), aedeagus without cornuti, stout, cylindrical. Coremeta fully developed (Plate V, fig. 31).

- (65) *Nephopteryx metamelana* Hmps.

Diana, 6.x. ; Mosul, 11.x. ; Bagdad, 2.ix. and 7.x. ; Ahwaz, 7.x.

- (66) *Nephopteryx divisella* Dup.

Diana, 6.x. ; Rowanduz, 8.x.

- (67) *Nephopteryx fallax* Stgr.

Rowanduz, 8.x.

- (68) *Nephopteryx eustatica* Meyr. (Exot. Micr. V, p. 68) (Plates V and XII, figs. 29 and 88).

Rayat, 27.vii., one male (type).

The type, a male, not, as Meyrick says, a female, has become mouldy during the war, so that only the left fore wing is somewhat preserved.

The genital armature is not peculiar. Costa of valvae thickened up to apex, gnathos narrow and pointed, aedeagus heavy and rounded, without cornuti.

(69) *Tephris stenopterella* spec. nov. (Plates III, IV and XII, figs. 21, 22 and 86).

*Exp.* 18-20 mm. Fore wings narrow, with costa nearly wholly straight, ground colour grey, with darker scale covering, first cross-line scarcely, second one distinctly developed, hind wings pale, nearly transparent, slightly darkened at margin.

The species is, by its narrow wings and the nearly straight costa, different from *fractilipella* Chrét., to which it is exteriorly similar. The latter is decidedly more broad-winged, has a distinctly arched costa, especially before apex.



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Fig. 1 : Larva of *Tephris stenopterella* spec. nov.. — Fig. 2 : Larva and shelter of same.

The first cross-line is really only represented by a sharp, pale angle at ax. Very close to it, there is a dark spot at inner margin. The second cross-line is visible in its whole undulated course, but little conspicuous. The marginal dots are distinct. Everywhere scattered are dark scales, missing only in the first quarter of the wing.

Genital armature : Characterized by very slender valves, rounded vinculum, short, rather thick aedeagus, with a long, dagger-like cornutus. Core-metacum very strongly developed.

*Holotype* (male) : Jordan bridge near Jericho (Palestine), 10.iv.1930 (Prep. 434).

*Allotype* (female) : Bagdad, 3.vi. (oasis).

*Paratype* : Bagdad, 9.ix., one specimen ex larva, *Tamarix* (?), v. 37.



**(70) *Salebria dionysia* Z. (= *isoxyla* Meyr.).**

Bagdad, 10-30.v., 3.vi. and 17.vii.; Mosul, 11.x.; Ahwaz, 10.ix. and 7.x.

**(71) *Salebria coremetella* spec. nov.**

In size, design and habitus so close to *S. brephiella* Stgr. that the distinguishing characters define the species: Fore wings less strongly powdered with white, the two cross-lines more yellow, and the exterior one less dentate interiorly. The latter character is particularly important, and may be the only fairly reliable means for the distinction of both species. With certainty, these species are separable by the genital organs: In *brephiella* (Plate IV, figs. 24, 25, 27 and 28) the sacculus (S) has two small points, in *coremetella* three, it is, moreover, more conspicuous in *brephiella*, as a whole. But this character is only visible at close observation. I could not find other differences in the genitalia. The coremeta, however, shows quite apparent differences that may best be seen in the illustration. In *brephiella*, there appear a pair of long, fine, scales (S) which are nearly rectangularly curved right below middle and that are wanting in *coremetella*. The paired scale tufts right and left rise from a scarcely chitinized callus (P). The median, odd, triangular part, is prolonged into a short point. The most apparent character of *coremetella* is a pair of very peculiarly shaped scales (D), which are three-dimensional. These scales are bent knee-like, are wholly wanting in *brephiella*, the latter having flattened, two-dimensionally formed scales. The median part has a much longer point (T), and right and left are a pair of short and a pair of long tufts.

*S. coremetella* is also very similar to *zelicella* Obth., which is, however, without examination of the genitalia, easily distinguished by the scale callus on the antennal base being only slightly developed, whilst both, *coremetella* and *brephiella*, show a very strong callus. Moreover, *zelicella* has a nearly straight exterior cross-band without teeth interiorly, and the first cross-band shows no break right before the costa, interiorly. As to the genital armature,

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(<sup>8</sup>) A gaily coloured larva, of the tamarisk-feeding type of coloration (which is much the same as the pine-feeding type) but the pattern arranged in lozenges rather than lines as is more usual. Green, with an obsolescent red-brown dorsal line, linking a series of yellow-brown dorsal hexagons, whose two outer angles are marked by white dots; anterior half of each somite, shaded with darker olive against the hexagon; lateral stripe, thick, irregular, partly double, whitish with yellow infusions, and its upper edge shaded with darker olive. Feet, whitish green; head, green, with black markings above; warts, white. The larva spins together a slight silken shelter among tamarisk leaves and by day is restless when out of this shelter. The adults hatched in May from larvae found the previous October. For a photo of it, see Figures 1 and 2 (E.P. Wiltshire).

*zelicella* is characterized by the lack of any coremeta and by the very stout, dentiform sacculus, and the aedeagus too, is quite differently built (Plate IV, fig. 26).

Localities : Kerbela desert, 15.iv.37, one female (paratype) ; Tripolitania, Sidi Mesri, 1-5.iv.24, one couple (allo- and holotype) (Prep. 448) and a male of the same locality (paratype).

**(72) *Salebria lepidella* Rag.**

Kurdistan, v.35 ; Ahwaz, 20.iv.

**(73) *Salebria semirubella* Sc.**

Shaqlawā, 17.viii.

**(74) *Salebria komaroffi amanella* Zy.**

Rowanduz, 28.viii. ; Berserini, 9.x. ; Diana, 29.vii. ; Shaqlawa 29.viii.

The type at hand, of *Nephopteryx diplocapna* Meyr. (Exot. Micr. V, p. 68), is identical with this species.

**(75) *Salebria argyrophanes* Meyr. (Exot. Micr. V, p. 66) (Plates IV and XII, figs. 23 and 37).**

Shaqlawā, 17.vii.35, one male (type).

This species is conspicuous by its entirely uniformly grey-black ground colour and the two distinctly marked cross-bands. The first, at 1/3, is quite straight, somewhat broader at anterior than at interior margin, the second cross-band is slightly arched, somewhat narrower than first. Hind wings grey. Palpi directed forward, ultimate joint very small, nearly punctiform. The scale callus above basal joint of antennae is little apparent.

Genital armature : It distinctly shows that the species cannot belong to *Salebria*, above all, because of the wanting coremeta. The valvae are exceptionally slender, very finely pointed, costa up to its tip evenly and distinctly thickened, as well as is the basal part of the interior margin. Aedeagus with only one cornutus.

**(76) *Myrlaea (Salebria) albistrigata* Stgr.**

Sulaf, 8.vi. ; Rayat, 27.vii.

**(77) *Oligochroa sordida* Stgr. (= *Pristophora atmologa* Meyr.).**

Bagdad, 2.vii. and 19.ix. ; Kerbela desert, 28.iii. ; Mosul, 23.vii.

**(78) *Proceratia rhexogramma* Meyr. (Exot. Micr. V, p. 74).**

Rayat, 27.vii., one female (type).

To the interesting convergence of this species with *Christophia judaica* Ams. I have referred previously (cf. Amsel, Ueber alte und neue Klein-

schmetterlinge aus dem Mittelmeergebiet, in : *Veröff. Kol. Mus. Bremen*, 3, p. 42, 1942).

**(79) *Epischnia arabica* spec. nov. (Plate III, figs. 19, 20).**

*Exp.* 18-21 mm. *Fore wings* pale grey, with slight, dark, longitudinally arranged scale covering, especially on the veins. An inconspicuous dot at 1/3 of the analis. *Hind wings* whitish grey.

This small species belongs in the *prodromella*-group, but is at once distinguished by its small size. The fore wings are very pale grey, the dark powder on the veins slight and little apparent, fringe, as fore wings without partition-line. Hind wings, inclusive of fringe, whitish grey. Palpi whitish grey, terminal joint small, drooping. Antennae of male without special characters.

Genital armature : Valvae slender, with margins parallel, with long tuft of hairs at fore margin, and with a chitinous hump at the middle. Aedeagus thick and heavy. Coremeta highly differentiated.

Localities : Ahwaz, 5.x.38; Kerbela desert, 2.v., two males.

**(80) *Epischnia lydella* Led. (= *E. gypsocrates* Meyr.).**

Rayat, 27.vii.

As the type shows, *E. gypsocrates* is a synonym.

**(81) *Epischnia semitica* Ams.**

Kerbela desert, 30.iii.

Was hitherto known only from the south end of the Dead Sea.

**(82) *Eurhodope monogrammos* Z.**

Maidan-i-Naftun, 5.v.; Kurdistan, 5.vi.

**(83) *Myelois pumicosa* Led.**

Qaraghan, 13.iii.

**(84) *Myelois cribrella* Hb.**

Salehabad near Dizful (Iran), 4.iv.

**(85) *Myelois synclina* Meyr.**

Shaqlawah, 1.viii.35, one female (type).

Very close to *osseella* Rag., the lateral dots are wanting and the discal spot is considerably farther apart from the outer cross-line.

**(86) *Myelois cinerea* Stgr.**

Kerbela desert, 5.v.; Bagdad, 31.v.; Ahwaz, 2.v.

**(87) *Myelois margaritella* Trti. (Plate V, fig. 33).**

Kerbela desert, 28.iii., 11.iv., 1.v. and 15.vi.

The males have an exp. of 22-29 mm., the females of 22-23 mm. I consider the specimens as belonging to this species, though there are some divergencies from Turati's original description (*Boll. Lab. Zool. Portici* XXIII, p. 120, pl. A, fig. 16, 1929). This species erected upon a single male of 22 mm. expansion, originating from Tripolitania, is said to have short, grey palpi, whilst the males at hand have white palpi, scarcely powdered with grey, and those of the females are more or less yellowish. The wings are white, without markings, only in one male, the costa is slightly brownish darkened before apex. The females, too, are wholly without markings, with their costa not darkened, and the hind wings are purely white. Under side of fore wings, as indicated in the description, grey, with white margin.

Since we have always to expect confusion of these very similar species (*nivosella* Rag., *fuscicostella* Mn., *calicatella* Rag., *immaculatella* Rag.), I may refer to the illustration of the genitalia of the specimen, considered by me to be *margaritella* Trti. (Prep. 436). They are very different from those of *nivosella* Rag.

**(88) *Scoparia phycophanes* Meyr. (Exot. Micr. V, p. 110) (Plate V, fig. 34).**

Rowanduz, 15.vi.35, one male (type).

The species is by its genital organs well characterized, as follows: Valvae without sacculus, costa thickened up to its apex, uncus with hook. Anellus (An) half as long as aedeagus, narrowed towards apex. Aedeagus cylindrical, with only one stout, slightly bent, dagger-shaped cornutus, that is half as long as the aedeagus (Prep. 450 a).

The British species of the genus *Scoparia* (s.str., sensu Chapman, *Trans. Ent. Soc. London*, 1911, p. 501) are all characterized by a well developed sacculus. Since *phycophanes*, as well as *rupestris* Meyr. does not possess a sacculus, the erection of a new genus for these two species may be justified. But I should like to refrain from doing so, as the genus *Dipleurina* Chp. (type: *crataegella* Hb.) occupies in this respect a transitional position, and as it appears doubtful, whether after further investigations on palaearctic and tropical species, further transitions between the various genera, erected by Chapman from among the collective genus *Scoparia*, will be found.

**(89) *Scoparia rupestris* Meyr. (Exot. Micr. V, p. 109) (Plate VI, figs 37 and 38).**

Genitaliter, this species (Prep. 451a) is very close to *phycophanes*, but has a cornutus that attains only 1/4 of the length of the aedeagus. In the

type examined, the aedeagus was drawn out backward over the vinculum, so that the anellus, attached to the apex of the aedeagus was bent backward. The aedeagus, too, has suffered a certain deformation during the preparation. In the Prep. 453a, which I consider identical with Prep. 451a, the aedeagus is figured in its normal size and position, as well as is the anellus. Though the costa of the valvae in this mount is thickened only up to  $\frac{3}{4}$ , whilst the type shows this thickening up to the apex of the valva, I believe, that both mounts belong to one and the same species, because all other differences are slight.

Localities: Rayat, 27.vii.35 (type) (Prep. 451a), and 17.vii. (Prep. 452a); Salehabad near Dizful, 4.iv.38 (Prep. 453a); Hamidiyah near Ahwaz, 14.x.38; Maidan-i-Naftun, 5.v.38; Mosul, 3.x.; Rowanduz, 8.x.

The specimens of the last four localities I place here having examined their genitalia.

**(90) *Eudoria (Scoparia) piroformis* spec. nov. (Plate V, fig. 35).**

Exteriorly distinguishable from *frequentella* Stt.. Genitaliter very well characterised by the pear-shaped anellus. Valvae distinctly widened exteriorly. Aedeagus without cornuti, uncus roundedly pointed. Gnathos very tender, pointed, distinctly widened at base.

Locality: Berserini, 9.x.36, three males (Prep. 454a and 456a).

The species from the Elburz mountains, reported as *frequentella* by Zerny (Z. Wien. Ent. V., 24, p. 171) belongs most probably to this species. Determinations in this group without examination of the genitalia are nearly all valueless. The species has nothing in common with *Sc. saerdabella* from Takht-i-Soleiman (Elburz-mountains), described by Osthelder (Mitt. Münch. Ent. Ges., 28, p. 31). *Sc. saerdabella* is a true *Scoparia* (Plate VI, fig. 36) s.str., with well developed sacculus and with aedeagus having two cornuti, the anellus being cylindrical (Prep. 455).

**(91) *Nymphula affinalis* Gn.**

Bagdad, 18.iii. and 16.xi.; Diana, 20.iv.; Mosul, 11.x.; Ahwaz, 6.iv.

**(93) (°) *Nomophila noctuella* Schiff.**

Bagdad, 16.xi.; Diana, 23.iv.; Shaqlawa, 17.vii.; Ahwaz, 20.iv.

**(94) *Trepteryx pertusalis* Hb.**

Amadia, 23.v. (4000 feet).

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(°) Species No. 92 in Dr. Amsel's list, as its label, which he quotes (Gorleston, l. viii.) and my diary prove, was taken by me in England. It has therefore been deleted. It must have been sent to Dr. Amsel for determination at the same time as the Middle East specimens (E.P. Wiltshire).



(95) **Cledeobia consecratalis** Led.

Rayat, 16.vi. (6000 feet).

(96) **Cledeobia uxoralis** Led.

Amadia, 28.v. and 9.vi. (4000 feet).

(97) **Cledeobia armenialis** Led.

Flew into car between Homs and Palmyra (Syria), 30.ix. (3000 feet, steppe-desert).

(98) **Actenia honestalis** Tr.

Rayat, 14.vii. (6000 feet).

(99) **Actenia brunnealis** Tr.

Bagdad, 25.x. (orchards).

(100) **Bostra tristis** Butl.

Rowanduz, 25.ix. (2000 feet); Shaqlawa, 29.viii. (3000 feet); Rayat, 27.vii. and 14.ix. (6000 feet).

(101) **Bostra marginalis** Rothsch.

Bagdad, 13.iv., 24.ix. and 9.xi.

Of this nearly unknown species, several couples are at hand. The species belongs in the vicinity of *caesarealis* Rag. In order to recognize it with certainty, I refer to the illustration of the genitalia (Plate VII, fig. 43). The armature is characterized by the much elongate vinculum, the long, evenly slender aedeagus, the evenly broad uncus, and the stout gnathos. The identification of the species with *marginalis* was ascertained by comparison with the female type.

(102) **Bostra atomalis** spec. nov. (Plate VI, fig. 42).

*Exp.* 10-12 mm. Fore wings nearly without design, brownish red, with scarcely indicated exterior cross-band. Hind wings nearly of the same colour. Palpi almost one and one-half as long as the diameter of the eye.

The species is primarily characterized by its small size. Among all hitherto known species, it is by far the smallest. The fore wings as much as devoid of markings, brownish red. Only the exterior cross-band is somewhat indicated in its upper part. The hind wings are somewhat more grey than the fore wings, but the difference is negligible. The costa is quite straight, apex sharply pointed. Palpi short, only one and one-half as long as the diameter of the eye, without markings, yellowish brown. Antennae annulated, paler and darker. On the under side of the fore wings, the exterior cross-band distinctly appears as a pale costal spot.

Genital armature : Uncus with broad base, distinctly narrowed towards apex, valvae evenly wide, evenly rounded. Aedeagus without apical thickening, quite evenly rod-shaped.

Locality : Ahwaz, 16.x. (desert), three males.

The species obviously comes nearest to *schwingenschussi* Zy. (Z. Wien. Ent. V., 24, p. 160, Taf. XI, fig. 6). This species, however, is much larger (18-18.5 mm.), otherwise it agrees with *atomalis* in the pointed fore wings, the short palpi and the extremely scanty pattern.

**(103) *Bostra minimalis* spec. nov. (Plates VI and XII, figs. 41 and 90).**

Exp. 14 mm. Fore wings brown, with two dark cross-lines, and 5-6 dark costal spots. Median spot slightly indicated.

This very small species shows at 1/4 a dark, somewhat undulating cross-band, which is sharply defined interiorly, but less distinctly so exteriorly. In front of this cross-line, there is a dark spot at the costa; behind it, up to the second cross-band, some further 4-5 costal spots. Between these spots, the ground is nearly purely yellowish brown, so that the darker costal spots are clearly marked. The second cross-band is slightly curved outward, not sharply defined interiorly, but sharply so exteriorly. Marginal area, particularly in the costal part, towards second cross-band, paler, causing the impression as if the dark cross-band were followed by a pale one. Fringe yellowish brown, with partition-line slightly indicated. Hind wings paler towards base, otherwise nearly uniformly brownish yellow. On the under side, there are 5-6 spots on the costa up to the middle. Wing uniformly greyish brown to the exterior cross-line. The pale cross-band extends onto the hind wing. Margin equalling wing area. Frons and palpi yellowish brown. Antennae (3/4 broken off) set with two rows of minute setae beneath. Glossa wanting. Stemmata visible.

Genital armature : Uncus somewhat broader at base than in the middle. Gnathos tender. Valves slightly pubescent. Aedeagus slender, evenly wide, club-like widened at base, whence it is narrowed again. Annellus very peculiar, with bell-shaped deepening, the exteriorly protruding terminal parts dentate. Vinculum not prolonged, slightly rounded (Prep. 427a).

Locality : Mosul desert, vi.35, one male.

The species is related to *caesarealis* Rag. and *marginalis* Roths., but differs from both by its very small size.

**(104) *Crocalia aglossalis* Rag. (= *Aglossa exsculpta* Meyr.).**

Ahwaz, 16.x. (desert), 7.v.; Mosul desert, vi.35.

The type of *Aglossa exsculpta* Meyr. (Exot. Micr. V, p. 142) shows that it is a synonym of *aglossalis*.

**(105) *Aglossa pinguinalis* L.**

A small male of 24 mm. expansion, very well agreeing with specimens from Germany, from Bagdad, 15.iv.

**(106) *Prochoristis rupicapralis* Led.**

Mosul desert, 6.v. and 4.vi.; Kerbela desert, 24.v. and 26.vi., common.

**(107) *Stiphrometasia sancta* Hmps.**

Kerbela desert, 29.iv. and 18.v.; Maidan-i-Naftun, 5.v.; Rowanduz 30.vii.; Ahwaz, 20.ix. and very common [*f. alba* Car. from Ahwaz, 20.ix.].

**(108) *Metasia octogenalis* Led.**

Salehabad near Dizful, 4.iv. (desert); Diana, 7-28.vi.; Mosul desert, vi.35; Rayat, 27.vii.; Sulaf, 8.vi. (4500 feet); Ahwaz, 7.x., and, therefore, in at least two generations.

Not differing from Syrian specimens.

**(109) *Metasia virginalis* Rag. (= *Cirrhochrista phthoneropsis* Meyr.).**

Kerbela desert, 19-28.vi.; Shaqlawa, 17.vii., Iraq; 11.vi.38, Luristan, ca. 3000 feet, Iran.

Zerny proved *Scirpophaga fulvilinealis* Hmps to be a synonym of *virginalis* (Z. Wien. Ent. V, 24, p. 173, 1939); *Cirrhochrista phthoneropsis* Meyr. (Exot. Micr. V, p. 135) has to be added as a new synonym, as the type at hand proves without any doubt. The examination of the genital organs shows that the species is closely related with *hymenalis* Gn.

**(110) *Metasia menfidalis* Stgr.**

Rowanduz, 6.x.; Berserini, 9.x.

**(111) *Cybgolomia haplogramma* Meyr. (Exot. Micr. V, p. 106) (Plates VII and XII, figs. 49 and 93).**

Mosul desert, vi.35., one male (type).

Apart from the type, there are at hand 13 further specimens from the Kerbela desert, 27.iv.-3.v., showing clearly that the course of the bands is liable to certain variations, and that it is not always so angularly marked as in the type illustrated.

In the genital armature of the male is remarkable that the lower margin of the valvae is turned inward, forming thus a pocket, that extends exteriorly into a sharp point (Prep. 422a).

**(112) *Cybgolomia triplacogramma* Meyr. (Exot. Micr. V, p. 106) (Plate XII, fig. 94).**

Rowanduz, 24.ix., one female (type).

This lovely species belongs in the relationship of *fractilinealis* Ersch.

- <sup>1</sup>  
a (113) **Cybalomia pentadalis** Led..  
Kerbela desert, 28.iii.-3.v.; Ahwaz, 20.iv., 30.viii., 18.ix. and 7.x.; Hamidiyah, 14.x.
- (114) **Synclera traducalis** Z.  
Mosul, 11.x.; Rowanduz, 16.viii.; Ahwaz, 14.ix.
- (115) **Ercta ornatalis** Dup.  
Salehabad near Dizful, 4.iv.; Bagdad, 24.x.
- (116) **Antigastra catalaunalis** Dup.  
Bagdad, 29.viii. and 9.xi. (oasis); Diana, 6.x.
- (117) **Duponchelia fovealis** Z.  
Ahwaz, 9.x.
- (118) **Parastenia intervacatalis** Chr. (= *Leptarchis psologramma* Meyr.).  
Rowanduz, 29.ix. and 8.x.; Berserini, 9.x.; Ahwaz, 5.vi.
- (119) **Parastenia bruguieralis** Dup.  
Rowanduz, 25.ix.; Berserini, 9.x.; Rayat, 14.ix.; Sulaf, 9.vi.; Shaqlawa, 29.viii.
- (120) **Mecyna polygonalis f. gilvata** F.  
Mosul, Berserini, 9.x.; Diana, 6.x., Hamidiya, near Ahwaz, 14.x.
- (121) **Therapne (Pyralis) obsoletalis** Mn  
Diana, 28.vi. and 29.vii.
- (122) **Pyralis imperialis** Car.  
Berserini, 9.x.
- (123) **Hypsopygia costalis** F.  
Sulaf, 9.vi.; Shaqlawa, 29.viii.; Diana, 29.viii. (rustic buildings).  
The specimens form a transition to ssp. *syriaca* Zy. which is no proper species, as the examination of the genital armature has shown, but belongs to *costalis*.
- (124) **Lepidogma tamaricalis** Mn.  
Ahwaz, 23.iv., 5.v. and 9.ix., ex larva from *Tamarix*.
- (125) **Lepidogma wiltshirei** spec. nov. (Plates VI and XII, figs. 40 and 91).  
*Exp.* 11-14 mm. Fore wings with dark, exteriorly sharply defined basal area, whitish grey central area, the exterior part of which is darkened by

the strongly undulated cross-band. Margin dark, hind wing dark with slightly developed pale band at exterior third.

This very small species has the typical pattern of the *Lepidogma* species. The dark basal area is limited by a line vertical to the inner margin. It is sharply separated from the whitish grey central area, convex exteriorly. The dark scales of the basal area are chiefly grey, but also mixed with brown and reddish. The lower limit is darkened by a number of nearly black scales. The central area is nearly white, the terminal cell-dot is little conspicuous. Towards the exterior band, the central area is much darkened, especially in its lower and median part, whilst the area adjacent to the upper portion of the band remains pale. The pale band in the upper costal part is broader than in the middle and below. Attached to the coastal part exteriorly, there are two striae-like darkenings, the upper one of which is less apparent. On this spot reddish scales too, are seen, as well as on either side of the inferior darkening of the cross-line right before the inner angle. Margin dark, and fringe with weak partition-line, grey. Hind wing grey, with little conspicuous band in exterior third. Costa and costal basal area whitish. Under side of both wings principally as upper side, but hind wings with much more conspicuous band and small spot, close to base. The basal area of the fore wing is wanting, the latter being grey up to the band, the band paler exteriorly. Margin grey. Thorax and shoulder tegmina as the basal area. Ultimate joint of palpi as long as joint 2, spotted with brown-grey.

Genital armature : Valvae much slenderer than in *tamaricalis*, not dilated exteriorly below the costal thorn (Prep. 439a).

Locality : Bagdad, 10.v. and 9.ix. (Oasis ; Tigris island), four males, one female.

I am dedicating this charming pretty species to Mr. E.P. Wiltshire.

*canifusalis*

(126) *Dattinia poliopastalis* Hmps.

Hamidiyah and Ahwaz, 14 and 16.x. (desert).

Also from the steppe-desert (3000 feet) near Palmyra in Syria. Common. (Prep. 352).

(127) *Dattinia iranalis* Ams.

Samarra, 13.x., one male (Prep. 351).

*Constantia*

(128) *Dattinia concatenalis* Led.

Kerbela desert, 5.v., several.

(129) *Constantia wiltshirei* spec. nov. (Plates VI and XII, figs. 39 and 92).

Exp. 27 mm. Fore wings grey, with strongly arched and indentate, but inconspicuous exterior cross-line, and nearly straight, but also zigzag



interior fascia at 1/5 and with small ring-spot at the cell-end. Hind wing pale grey.

This species is of the size of *pectinalis* H.-S. and is very similar to it in the markings too. The denticulations of the exterior cross-line are distinctly larger, however, and the inward curve below the cell is stronger. The central area is generally somewhat darker than the basal and marginal area, though in some specimens nearly evenly grey. The spot situated in *pectinalis* below the circular spot interiorly, is wanting in *wiltshirei*, the interior band is more zigzag and broader. Hind wings pale grey, with an indistinct marginal band. Under side in the distal area up to the second cross-band somewhat darkened, otherwise, as the hind wings, whitish grey. Palpi two and one-half times as long as the diameter of the eye, mixed with grey and white, paler below and within. The combed antennae in the typical form curled at apex.

Genital armature : Uncus slender, scarcely widened towards apex, rather long (in *pectinalis* broad and oval). Basal part of aedeagus slenderer than upper part, cornuti similar to those of *infascialis* Ams. (in the drawing ejaculated at the upper end), as a small ring or a snake-shaped chitinous formation. Valvae rather broad and heavy (Prep. 341).

Locality : Kerbela desert, 30.iii.-12.iv.37, five males.

Named in honour of Mr. E.P. Wiltshire.

**(130) *Constantia argentalis* Hmps.**

Kerbela desert, 22.v.; Ahwaz, 24.iv.-7.v.

**(131) *Constantia colchicalis* H.-S.**

Rayat, 24.viii. (6000 feet); Ahwaz and Hamidiyah, 14.v. and 15.x. (250 feet), not rare.

**(132) *Constantia brandti* Ams.**

Ahwaz, 7.v., two specimens.

**(133) *Psammotis pulveralis* Hb.**

Rayat, 16.vi. (5000-6000 feet), two females.

**(134) *Hellula undalis* F.**

Baghdad, 31.v. and 9.xi.; Rowanduz, 8.x.; Diana, 18.iv. and 21.v.; Ser Amadia, ix.35; Ahwaz, 28.iv.

**(135) *Loxostege scalaris* Chr.**

Kerbela desert, 12.vi., one specimen.

**(136) *Loxostege nudalis* Hmps.**

Bagdad, 22.iv. and 31.v. (oasis), common.

Somewhat varying in the size of the dots, the exterior ones sometimes connected to a line.

**(137) *Loxostege ustrinalis* Chr.**

Hamidiyah near Ahwaz, 14.x., several.

**(138) *Evergestis caesialis* H.-S.**

Ser Amadia in September (6000 feet), one specimen.

**(139) *Evergestis desertalis* Hb.**

Dyala Gorge, Table Mount (250 feet), 21.iii., one female.

Meyrick identified the specimen as *Noctuella arcuatalis* Hmps. Should this identification be correct, *arctuatalis* had to be deleted as a synonym. Unfortunately, the original Hampson's description is not at hand at present, thus I am unable to decide this question.

**(140) *Evergestis isatidalis* Dup.**

Bagdad, 21.i. and 14.xii.

The examination of the genitalia of a specimen from Palestine, labelled *conquisitalis* Luc., revealed complete identity with *isatidalis*. If this with *conquisitalis* labelled specimen is the true *conquisitalis*, this species has to be put as a synonym to *isatidalis*.

**(141) *Phlyctaenodes pustulalis* Hb.**

A badly preserved male from Sheikh Aadi, 2.vi., impossible to determine as regards the subspecies.

**(142) *Phlyctaenodes cruentalis* Hb.**

Rayat, 24.vi. (Prep. 413a).

**(143) *Phlyctaenodes platyphaea* Meyr. (Exot. Micr. V, p. 109) (Plate XII, fig. 102).**

Rayat, 14.vii., two females.

The types present show that the species was correctly put by Meyrick near *cruentalis* Hb.. Since this species belongs to *Phlyctaenodes* and not to *Loxostege*, *platyphaea* too has to be put here.

**(144) *Phlyctaenodes foviferalis* Hmps.**

Rowanduz, 8.x.; Bagdad, 2.-19.ix.; Jebel Darawishka, 14.xi.; Berse-rini, 9.x.; Ahwaz, 16.x. (desert).

**(145) *Pachyzancla licarsipalis* Wlk.**

Bagdad, 20.i., 24.ix., 2.x. and 17.xi.; Ahwaz, 5.x.

**(146) *Pionea languidalis* Ev.**

Rayat, 24.vi. (4500 feet).

**(147) *Pionea ferrugalis* Hb.**

Diana, 19.v.; Bagdad, 24.ii.; Rowanduz, 7.x.; Ahwaz 6.x.

**(148) *Pionea confinalis* Led.**

Rayat, 24.vi.-17.vii.

The genital armature is extraordinarily similar to that of *institalis* Hb. The main difference is in the aedeagus: this has in *confinalis* a distinctly roughened part at tip, whilst it is quite smooth in *institalis*. Cornuti are wanting in *confinalis*, while there is a single elongate one visible in *institalis*.

**(149) *Pyrausta meridionalis* Stgr.**

Rowanduz, 8.x.; Diana, 21.v.; Shawlaw, 1.viii.

Dr. de Lattin drew first my attention to it that the species is specifically different from *aurata* Sc. The uncus is distinctly broader and heavier.

**(150) *Pyrausta limbopunctalis* H.-S.**

Rayat, 16.vi.-14.viii. (6000-7000 feet).

Three very badly preserved specimens.

**(151) *Pyrausta incoloralis* Gn.**

Bagdad, 9.ii. and 12.x.; Ahwaz, 13.iv.

**(152) *Pyrausta praepetalis* Led. (= *Oeobia haemopsamma* Meyr.).**

Sulaf, 8.vi.; Mount Alvand, ca. 2500 m., 21.vi.; Rayat, 24.vi. and 18.vii.

**(153) *Pyrausta trinalis* Schiff.**

Mosul desert, 4.-24.vi.

Very badly preserved specimens, uncertain as to their subspecies. Only one specimen from Rayat is with certainty ssp. *pontica* Stgr. (= *levilinealis* Ams.).

**(154) *Pyrausta virginalis* Dup.**

Mosul, 1.vi.

**(155) *Pyrausta cespitalis* Schiff.**

Rowanduz, 28.viii.

**(156) *Krombia pulchella* spec. nov. (Plates VII and XII, figs. 44 and 97).**

Exp. 12 mm. Fore wings uniformly ochrous, with two white cross-lines and a white central spot.

This lovely little species is characterized by uniformly ochrous wings. The first white cross-band lies at  $1/3$ , is slightly curved inward and in its whole course evenly wide. The second band, nearly as wide as the first, begins at  $5/6$  in the direction to the outer margin, bends inward at the level of the upper cell-end, and runs about parallel to the margin, attaining it at the interior angle. The white central spot, dark in the lower part, is connected with the cross-band. Margin with fine, dark line. Fringe grey, with dark basal line. Hind wings grey, paler before margin. Antennae broken off in the type.

Genital armature : Uncus bipartite, formed as tongues. Gnathos developed as small, pointed tubercle. Valvae with well developed costa. Anellus strongly differentiated, forming two long, pointed chitinous ridges. Aedeagus scarcely longer than the anellus, evenly cylindrical (Prep. 428a).

Locality : Ahwaz (Iran), 16.x.38 (desert), one male.

The species comes close to *harralis* Chrét., but the two cross-bands are darker in that species; their course, however, is very similar.

**(157) *Noctuelia floralis* Hb.**

Mosul, 21.vii.; Bagdad, 25.x.; Kerbela desert, 3.v.; Shaqlawa, 1.viii.; Ahwaz, 7.v. and 15.ix.

**(158) *Cornifrons ulceratalis* Led.**

Bagdad, 18.iii.; Dyala, 21.iii.; Kerbela desert, 28.iii.; Qaraghan, 13.iii., common.

**The genus *Tegostoma* Z. (Plate XI, fig. 82A to G)**

In 1848, Zeller erected (*Isis*, p. 561) the genus *Tegostoma* with the type *comparalis* Hb., and characterized it (besides other details), as follows : "Epistomium horizontaliter productum subtus excavatum antice subemarginatum", i.e., in English : "Frontal projection horizontally produced, excavated beneath, slightly emarginated in front." Zeller points out, moreover, that Herrich-Schaeffer fully described the characteristic build of the head, on the covering to part 165 of Panzer's Fauna. This description I have not at hand at present. Later, in 1863 (*Wien. Ent. Mtschr.* VII, p. 71), Lederer gave an illustration (Taf. 4, Fig. 17) and description of the head, the latter running as follows : "Stirn mit langer, abwärts gekrümmter, vorn sehr verschmälelter, zweispitziger Hornplatte". Heinemann, in his treatment of the genus *Tegostoma* (p. 56), proved that "der Stirnfortsatz fast so lang wie der Kopf ist, unter ihm steht am Rande der Augen noch ein ganz kurzer spitzer horniger Vorsprung". Rebel (in Spuler) only writes : "Die Stirn mit langer zweispitziger Hornplatte".

To this I have to remark: Zeller's note that the horny plate is excavated beneath is not mentioned by any one of the later authors. On the other hand, Zeller does not mention anything of the horny pointed process, situated at the margin of the eyes, a character that could hardly have been missed by an exact observer as Zeller was. But the specimens at hand, labelled *comparalis*, possess not only one horny process at the margin of the eye, but two of them, and the frontal projection is in fact not excavated beneath, but wholly smooth, and scarcely bidentate at apex, but at most somewhat impressed in the middle, in any case, not nearly as pointed as Lederer illustrates it. In Lederer's figure, the horny process at the margin of the eye is wanting too. If Zeller's statement that the frontal plate is excavated beneath, is correct, and if it is not based on an erroneous observation, his *comparalis* cannot be identical with mine. What *comparalis* really is, is therefore not quite clear at the moment, as long as Hübner's types are not re-examined. In any case I think it necessary to point to the possibility of the presence of exteriorly very similar species. The discovery of *Tegostoma mossulalis* Ams., exteriorly very similar to *comparalis*, shows that we have to consider such a possibility.

I am giving, therefore, an illustration of the head of the species that I consider as *comparalis*, and showing the following characters: Frontal process quite smooth beneath, not excavated, scarcely bidentate in front, only somewhat emarginated in the middle, two pointed tubercles at the anterior margin of the eye.

Since the statements of Lederer about other species of this group, e.g., for *lepidalis* H.-S., are not complete (he says of this species, put in the genus *Anthophilodes* Gn.: "Stirn mit einem hornigen Fortsatz, dessen breite Abstützung mitten ausgerandet und daher zweispitzig erscheint", whereas in fact close to this frontal process, there is a very stout horny plate with two strong points, still on the anterior margin of the eye), we may assume that the differences, in comparison with his account and also with the inadequate descriptions of the other authors, are due to faulty observation, and that thus the species considered here as *comparalis* is in fact the true *comparalis* Hb.

Moreover, the scope of the genus *Tegostoma* in Rebel's catalogue of 1901 is doubtless unjustifiable. Several genera have been confused that have to be re-erected. The species *disparalis* H.-S. belongs to the genus *Aeschremon*, rightly erected by Lederer, for the frontal process of *disparalis* is nothing else than a projection that is truncate in front, and it can thus not at all be compared with *comparalis*. *Lepidalis* H.-S. belongs, according to Lederer to *Anthophilodes* Gn. This genus, however has to sink as a synonym to *Tegostoma*. *Pudicalis* Dup. belongs to *Emprepes*



Led., and cannot be put to *Tegostoma*, as the frons is only somewhat produced and truncate anteriorly, and as other distinguishing characters are wanting. The genital armature of this species also differs greatly from the normal build. *Pentodontalis* Ersch., very similar in its markings to *pu-dicalis* has nothing in common as to the formation of the frons; the frontal process is bidentate. *Russulalis* has a broad, strongly convex frontal process, without teeth or points; it continues in front of the margin of the eye into a slightly emarginated plate, which attains the lower margin of the eye. This plate has only one blunt tooth, thus it is quite different in this species from *Tegostoma*, but is so similar to *Emprepes* Led. that I should like to remove *russulalis* to that genus. *Emprepes pudicalis* has, like *russulalis*, the frons convex, without teeth, but a wholly rounded chitinous plate in front of eyes. Since this plate has also only a very blunt tooth in *russulalis*, this species may be put here (sc. to *Emprepes*). The differences in the antennae, viz.: pubescent in *pudicalis*, but ciliate in *russulalis*, are not of a generic nature. *Kabylalis* has a stout, convex, blunt frontal process that is narrowed anteriorly. Viewed from in front this blunt apex appears nearly circular. The plate before margin of eye is very narrow and without teeth. The formation of the head is, therefore, nearly exactly as in *disparalis* H.-S.. The species belongs, therefore, to *Aeschremon*. The genus *Anthophilopsis*, erected by Ragonot for *baphialis* Led. and *möschleri* Chr. has to be maintained, because these species are characterized by the lack of maxillar palpi, whilst *Tegostoma* has conspicuous palpi. Both these genera agree in the formation of the frons. To the above named genera, erected by Ragonot, in his excellent paper in *Ann. Soc. Ent. Fr.*, 1890, pp. 448-449, also comes the genus *Kerbela* nov., outstanding at once by the sharp, pointed, forwardly directed thorn between the antennal insertions. For *quadridentale* Zy., 1914 (*Ann. Mus. Wien*, p. 337, T. XXVI, f. 41), however, a new genus must be erected, for which I propose the name *Usgentia* gen. nov. characterized by the following features:

*Frontal process laterally compressed, deeply emarginated and thus bidentate, the upper tooth longer than the lower; the inferior part of the process is laterally nearly alate, and produced into a small tooth at the ocular angles, on either side, the whole frontal process thus appearing quadridentate.*

Recapitulating, the following key summarises these observations:

1. In front of the anterior margin of the eye a small toothless chitinous plate fused with the more or less strongly convex frontal process ..... 2
- In front of the anterior margin of the eye a generally large chitinous plate with one or several teeth. .... 3

2. Frontal process convex, not truncate in front, but semicircularly limited  
..... *Emprepes* Led. (*pudicalis* Chr., *chirazalis* Ams., *palealis* Ams.,  
*brabantii* Chrét.).
- Frontal process not convex, forming a strongly narrowed blunt projection. .... *Aeschremon* Led. (*disparalis* H.-S., *kabylalis* Rbl.,  
*paralis* Hmps., *ruptilinealis* Zy.).
3. Frontal process compressed laterally, produced into an upper and lower tooth ..... *Usgentia* Ams. (*quadridentale* Zy.).
- Frontal process not compressed laterally, not forming an upper and lower tooth. .... 4
4. Chitinous plate in front of eyes with but one blunt projection, frons strongly convex. .... *Emprepes* Led. (*russulalis* Chr.).
- Chitinous plate in front of eyes with two or three pointed projections. Frons not convex but terminating into a plate or a projection ..... 5
5. Between the insertions of the antennae a pointed projection, directed anteriorly. .... *Kerbela* Ams. (*monotona* Ams.).
- Between the insertions of the antennae no anteriorly directed projection. .... 6
6. Frontal process pointed ..... *Cataonia* Rag. (*erubescens* Chr. (= *monoceralis* Rag.)).
- Frontal process not pointed, ending in a bidentate or blunt plate. .... 7
7. Maxillary palpi conspicuous. .... *Tegostoma* Z. (*comparalis* Hb., *mossulalis* Ams., *ahwazalis* Ams., *lepidalis* H.-S.).
8. Chitinous plate in front of the ocular margin tridentate. Antennae of male bare. .... *Turania* Rag. (*pentodontalis* Ersch.).
- Chitinous plate bidentate. Antennae of male ciliate. .... *Anthophilopsis* Rag. (*möschleri* Chr. *baphialis* Led.).

Annotation: The position of the species *embale* Car. 1928, *albizonalis* Hmps. 1900, *salsolacalis* Chrét. 1910, *turcomanica* Chrét., *stangei* Zy. 1916, *concinna* Chr. and *conchylalis* Chr., unknown to me in nature, remain uncertain for reason of insufficient descriptions by the authors. I am listing *brabantii* Chrét. under *Emprepes*, since the genus *Hammocallos* (Le Naturaliste, 1908, p. 236) may be identical with *Emprepes*. M. Léon Lhomme had the kindness to send me a hitherto unpublished Chrétien's drawing, of the head and the wing venation of *Hammocallos*. I gathered from this, that *Hammocallos* as much as wholly agrees with *Emprepes* in the formation of the frons, the labial and maxillary palpi, the antennae and the wing venation. Solely the venation of the hind wings differs in as far, as it approximates sc, but does not join it as in *Emprepes*. *Hammocallos* is, however, erected upon a single specimen of *brabantii*, of which Chrétien in his draft at hand, of his description, expressly says that the

specimen is abnormal, the venation of the right wing deviating from that of the left one. Most likely, therefore, the course of rr (vein 7) is anomalous, and does not justify the generic separation from *Emprepes*. A final decision, though, will only be possible, if more material of *brabanti* will have been examined, especially, after an examination of the genital armature has been made.

**(159) *Tegostoma mossulalis* spec. nov. (Plate VII, fig. 46).**

*Exp.* 20-21 mm. *Fore wings* ochrous, with conspicuous ring- and reniform spot, and with exterior, arched cross-line at 4/5. First cross-line at 1/4 nearly wanting. *Hind wings* unicolorous. Frontal plate much narrowed anteriorly, truncate apically, scarcely emarginated in the middle, not excavated beneath. In front of the anterior margin of the eye a pointed tooth above and below. Closely related to *comparalis* Hb.

The species comes so near to *comparalis* (Plate VII, fig. 45) that it is sufficient for its characterisation to indicate the most important differences: *T. mossulalis* is somewhat larger, having, above all, narrower and longer wings, paler, more uniform ground colour, with less markings. The first cross-band, conspicuous, as a rule, in *comparalis*, is nearly entirely wanting in *mossulalis*, the second cross-line is more strongly arched below costa, the margin is of the same colour as the remainder of the fore wing, whilst in *comparalis* it is almost invariably darkened. The frons is formed as in *comparalis*.

There are distinct differences in the genital armature: The gnathos is longer and stouter, the two lobes of the uncus are broader, and narrowed at their base. The valvae are much more widened and broader, apically, the aedeagus is not narrowed and rounded distally, but evenly wide and truncate.

*Locality*: Mosul, 21.vi.35 (leg. E.P. Wiltshire), and specimens without date from the same locality (ex coll. Schawerda), collected by Anton Otto (1917-1918), altogether 2 males and 10 females. It may be remarked that the specimens from Tunisia, mentioned by Caradja under the name of *distinctale*, in litt. (*D.E.Z. Iris*, 1916, p. 42) belong most probably to this species. Most likely, both species are confused in many collections.

**(160) *Tegostoma ahwazalis* spec. nov. (Plates VII and XII, figs. 47 and 95).**

*Exp.* 20 mm. *Fore wings* beige-coloured, with indistinctly defined, spotty, short central band, and narrow, pale band behind it. *Hind wings* uniformly grey.

The formation of the frons is very similar to that of *comparalis* Hb., with frontal plate truncate anteriorly, but the latter being shorter, with

keel-like thickening above. In front of the margin of the eye with two projections as in *comparalis*. Maxillary palpi small, but distinct. Labial palpi protruding, somewhat surpassing the frontal plate, pale grey, ultimate segment half as long as second. Antennae shortly ciliate. A single cilia scarcely as long as the diameter of the flagellum.

Fore wings characteristically beige-coloured, with a short, whitish band in the middle, which does not attain either the fore or the interior margin. It is not sharply defined, but of even width throughout. Between it and the exterior margin, there is a fine whitish line, being still shorter and much finer than the central band. The margin is slightly whitish at base of fringe, the fringe is beige-coloured in its basal half, whitish exteriorly. The ground colour very evenly dominates the whole wing. Hind wing grey, fringe as in the fore wing. Abdomen grey.

Genital armature: Similar to that of *lepidalis* HS., but gnathos heavier, very evenly shaped towards its rounded apex. Costa of valvae straight, not arched. Interior margin slightly arched.

Locality: Ahwaz, 16.x.38 (desert), one male.

**(161) Anthophilopsis (Tegostoma) baphialis Led.**

Bagdad, 24.iv., 14.vii. (oasis: Tigris island); Kerbela desert, 4.v.; Mosul, 21.vi., 21.vii. and 21.viii.; Rayat, 27.vii. (6000 feet); Hamidiyah near Ahwaz, 14.x.

**(162) Aeschremon (Tegostoma) disparalis H.-S.**

Bagdad, 22.iii. (to light), 3.iv. (flying at 5.30 p.m. in sunlight above *Capparis*), 23.ix. and 28.x.

**(163) Emprepes (Tegostoma) russulalis Chr. (=Noctuelia baryscia Meyr.) (Exot. Micr. V, p. 109).**

Kerbela desert, 11.iv.; Diana, 28.vi.; Ahwaz, 7.iv.

As the type at hand, of *Noctuelia baryscia* Meyr., proves, this species is only a synonym of *russulalis* Chr.

**(164) Kerbela monotona gen. et spec. nov. (Plates VII and XI, figs. 48 and 82 d.)**

Frons with long, anteriorly narrowed chitinous plate, which is pointedly and deeply emarginated at apex, appearing, therefore, sharply bidentate, smooth beneath, not excavated. Anterior margin of the eye surrounded by a small chitinous plate, that terminates above and below into a long, sharply pointed thorn. Upper thorn in connexion with the chitinous plate of the frons. Between the antennal cavities, at the base of the frontal plate, there is a sharp, anteriorly directed thorn. Palpi directed forward, not attaining the end of the frontal plate. Maxillary palpi wanting. Antennae of male

with two rows of cilia beneath. Genital armature of *Tegostoma*-type. Venation of fore wing : r3 and r4 long-stalked, the stalk nearly as long as r3, arising very close to r2. r5 running into the margin below apex, m1 close to r5, m2 far from m1, but close to m3. Cu 1 twice as far from m3 as m3 from m2. Very distinct is the nearly scale-free deepening on the under side of the male wing, at the upper end of the cell, between the origin of r5 and r4+3, more conspicuous than in *Tegostoma* Z. Venation of hind wing : m2, m3 and cu 1 originating close to one another, at equal distances. In principle, the venation is as in *Tegostoma*, and the antennae and the male genital organs, too, agree with this genus. The main differences lie in the conspicuous hump of the frons, between the insertions of the antennae, wanting in *Tegostoma*, the very short palpi, distinctly surpassing the frontal plate in *Tegostoma*, and the wanting maxillary palpi.

Type : *Kerbela monotona* spec. nov.

Exp. 17 mm. Fore wings nearly unicolorously ochrous, with a scarcely visible transversal shade behind middle. Hind wings somewhat darker. Under side of both pairs of wings paler, without markings.

Genital armature : Valvae scarcely narrower at base than at apex, uncus rather deeply, and particularly much more broadly emarginated than in the allied species. Aedeagus long, somewhat widened at apex. Gnathos heavy (Prep. 299).

Locality : Kerbela desert, 29.iv.-3.v.; Madan-i-Naftun, 5.v., three males, one female.

**(165) *Epidauria discella* Rag. (Addition, to add after No. 18).**

Shaqlawā, 1.viii.; Rowanduz, 15.vi.; Mosul desert, vi.; Diana, 28.vi. (det. Meyrick)

**PTEROPHORIDAE**

**(166) *Agdistis bagdadiensis* spec. nov. (Plates VII and VIII, figs. 50 and 51).**

Exp. 22 mm. So similar to *A. tamaricis* Z. that an account of the differences in the male sex will suffice : Valvae not symmetrical (in *tamaricis*, according to Pierce and Metcalf : The Genitalia of the Pyrales, Pl. XXIX, the valvae are exactly symmetrical), but otherwise very similar to those of *tamaricis*. Right valva (in ventral aspect) with widened exterior portion, the exterior margin of which (A) is straight, not emarginated as in *tamaricis*. The left valva, being a little shorter than the right one, without enlargement of the exterior part. The chitinous bands, pushed over the valvae (being quite symmetrical in *tamaricis*), are quite different in both valvae, in *bagdadiensis*. The plate P, much longer than high in *tamaricis*,



is in *bagdadiensis* considerably higher, thus appearing square. Uncus, aedeagus and sternite IX agree in both species.

Locality: Bagdad, 10.v., one male (Prep. 513a).

**(167) *Pterophorus monodactylus* L.**

Diana, 19.v.

**(168) *Pterophorus terrenus* Meyr. (Exot. Micr. V, p. 64).**

Rayat, 24.vi., one female.

The species gives the impression of *giganteus*, as to its markings and size. But the antennae are quite different. They are annulated brown and pale, whilst *giganteus* possesses unicolorous antennae.

**(169) *Oxyptilus laetus* Z.**

Shaqlawā, 17.vii.

**(170) ? *Marasmarcha leucocrossa* Meyr. (Exot. Micr. V, p. 64) (Plate XII, fig. 96).**

Diana, 20.v., one female (type).

There is unfortunately only the female type at hand, though the species was described after three specimens, amongst them one male. At the first glance, the species gives the impression of a narrow-winged *Pl. rhododactyla* F., whose peculiar, beautiful reddish brown hue it has. On closer examination one can prove that the species under no circumstances belongs to *Marasmarcha*, as shows the distinct interior angle of the second feather of the fore wing. The definite position of the species must still remain uncertain, as long as the male is not examined and the venation is not known. The female has a simple wing retaining bristle, the three feathers of the hind wing all have smooth interior margin, i.e. without any angle. On the third feather, there is no scale-tuft at the interior margin. The fringe of the tips of the fore wing is pure white exteriorly, basally of the colour of the fore wing, but the limit between the two colours does not go evenly over the fringe, but obliquely from above to below, at least on the first tip.

**(171) *Alucita ischnodactyla* Tr.**

Bagdad, 7.x., one male.

The determination was made after the material of Staudinger's collection.

**(172) *Buckleria (Trichoptilus) siceliota* Z.**

Bagdad, 2.ix.

## TORTRICIDAE

(173) *Oxypteron impar* Stgr.

Jebel Darawishka, 14.xi.36 (desert).

(174) *Cnephasia argentana* Cl.

Rayat, 28.vii. (8000 feet).

(175) *Tortrix viridana* L.

Amadia, 28.v.; Diana, 23.v.

(176) *Polychrosis artemisiana* Z. (= *glebifera* Meyr., Exot. Micr. I, p. 34).

Shaqlaw, 17.vii., one specimen.

(177) *Bactra lanceolana* Hb.

Bagdad, 10.v., 16.ii., 25.x. and 27.x. (oasis); Mosul, 21.vi.; Ahwaz, 6.x. and 20.iv.

(178) *Bactra venosana* Z.

Jebel Darawishka, 14.x. (desert, 750 feet); Bagdad, 3.vi. (oasis, Tigris island).

(179) *Eucosma esmodes* Meyr. (Exot. Micr. V, p. 99) (Plate VIII, fig. 52).

Diana, 19.v., one male (type).

The small species is of 14 mm. expansion, brown, with indistinct darkening of the space from the middle to shortly before wing base. The speculum shows only two black dots in the badly preserved type. The genital armature does not show anything particular (Prep. 512a).

(180) *Laspeyresia tricentra* Meyr. (= ? *microgrammana* Gn.).

Rowanduz, 25.ix., one female (det. Meyrick).

I am unable to separate this specimen, determined by Meyrick, from *microgrammana*, and thus suspect it to be just a synonym of this species.

(181) *Semasia bagdadiana* spec. nov. (Plates VIII and XII, figs. 53 and 98).

Exp. 13-14 mm. Fore wing with markings not sharply defined, undulated with pale and dark grey or brownish: an angular, indistinctly defined basal area, a median band, being broadly attached to the interior margin, but pointedly attached to the costa, and not sharply limited, with numerous yellowish costal hooks and an indistinct speculum.

The species reminds somewhat of the grey forms of *Epiblema nisella* Cl. The basal area as well as the median band are very indistinctly defined, often scarcely visible. The costal hooks become more distinct towards apex,

but begin at base, and alternate with brownish hooks. Antennae slightly pale and dark annulated, ultimate joint of palpi very small, median joint with grey scales.

Genital armature : Valvae dorsally near base with a mobile, slender chitinous rod (P), which is set with numerous, very long hairs. Lower part of exterior margin with a narrow area of pointed thorns. Interior margin thickened. Aedeagus without cornuti, somewhat narrowed towards apex.

Locality : Bagdad, 3.iv., 3.vi. and 14.vii., eight specimens, males and females, mostly in bad condition (Oasis : Tigris island).

The species does not come near to any of those known to me.

#### ATYCHIIDAE

##### (182) *Atychia mesopotamica* spec. nov. (Plate VIII, fig. 54).

*Exp.* 18 mm. *Fore wings* brown, slightly paler in the fold, *hind wings* blackish brown, basal area striatedly paler. *Antennae* setiform. *Palpi* covered with adpressed scales.

There is little to be added to this brief diagnosis. The yellow-grey palpi are covered with adpressed scales, ultimate joint being only 1/3 of second. Fringe of fore wing brown as the wing, becoming somewhat paler by yellowish scales. Fringe of hind wing as that of fore wing, and therefore, well separated against the blackish brown hind wing. On the under side, the fore wings are yellowish in the middle, the fringe of the hind wings as well, particularly at the costa and at hind margin. The paler stripes at the basal area are nearly forming bands, on the hind wing.

Genital armature : Uncus emarginated, valvae without distinction. Aedeagus cylindrical.

The species belongs in the group having setiform antennae and adpressed scales on the palpi, and has to be put, therefore, to the relationship of *A. nana* Tr.

Locality : Diana, 16.vii. (slopes of small valley, 8 a.m.), one male.

#### GELECHIIDAE

##### (183) *Ethmia* (= *Psecadia*) *pusiella* Roem.

Bagdad, 26.x., and 3.xi. ; Ser Amadia, ix.35. ; ex larva *Asperugo procumbens*.

The specimens agree in design and size with others from Palestine, but have ground colour white, without the slight yellowish hue, which characterises the Palestinian race. But they are not as purely white as specimens from Germany or Austria. Geographically, the species varies enormously. Whether the subspecies *candidella* Alph. or *orientella* Car. agree

with this race, cannot be decided definitely at present, since I could not obtain Alpheraki's original description.

**(184) *Ethmia lepidella* Chrét.**

Jebel Darawishka, 14.xi.

**(185) *Ethmia bipunctella* griseicostella Wiltsh.**

Rayat, 13.vii. (5000 feet).

**(186) *Ethmia quadrinotella* Mn.**

Kerbela desert, 26.iii.

**(187) *Depressaria mesopotamica* spec. nov. (Plate IX, fig. 58).**

Exp. 24 mm. Very similar to *veneficella* Z., somewhat darker and of more uniform colour, but genitaliter quite different. Uncus with a pair very weakly chitinized, slender, nearly filiform appendages. Gnathos dagger-shaped, very large and stout. Aedeagus bent for a quadrant, evenly thick. Sacculus of valvae developed as a strong thickening of the interior margin, but without points or hooks. Vinculum rounded (Prep. 499 a).

*Veneficella* Z. is, in spite of being very similar exteriorly, quite differently built, and has, besides other details, a long produced vinculum.

Locality: Maidan-i-Naitun, 5.v.38, one male.

**(188) *Depressaria obolucha* Meyr. (Exot. Micr. V, p. 51) (Plate VIII, fig. 57).**

Ser Amadia, viii.35, one male (type).

Meyrick confused the sexes; the type is in fact a male, the genitalia of which prove the close affinity to *veneficella* Z., though the species is not similar, neither in size nor in design. Moreover, the type is badly preserved so that the species could only be "saved" by the representation of the genitalia (Prep. 511 a).

**(189) *Depressaria xyleuta* Meyr. (Exot. Micr. I, p. 115) (Plate IX, fig. 59).**

Rayat, 14.v.; Mosul desert, 4.vi.; Ser Amadia, ix.35.

This species, described in 1913 after a male from Taurus is present in several specimens, determined by Meyrick himself. Of the genital organs, the bidentate sacculus of the valvae is remarkable, and also the pair of auricular, lobiform appendages of the uncus (Prep. 498 a).

**(190) *Schistodepressaria ruticola* Chr. (= *Mnemogenes melitophaea* Meyr. in litt.).**

Mosul desert, vi.35.

**(191) *Nothris verbascella clarella* Ams.**

Larva on *Verbascum*, 15.iii., Jebel Daraushka, Qizil Robot, hatched 26.iv.1936.

(192) ***Gelechia bathrosticta* Meyr. (Exot. Micr. V, p. 43) (Plates IX and XI, figs. 65 and 77).**

Mosul desert, vi.35, one male (type).

The only specimen of this species is very mouldy and in a bad condition. Characteristic for the species is a rather large, black spot right above interior margin at its base. The other black scales in the cell and at the margin are hardly conspicuous.

In the venation, r4 and r5 are rather long-stalked, m1 and m2 are rather widely separated, m2 and m3 emerge close together, the latter right from the corner of the cell. Immediately nearby originated cu 1, being distinctly curved, cu2 issues far from it, at  $\frac{3}{4}$  of the lower vein confining the cell.

Genital armature : Valva and sacculus completely separated from each other, the former slightly, but uniformly chitinized, without other characteristics, broadly pointed at apex. Sacculus at apex rectangularly bent into a stout hook. Vinculum rounded, aedeagus small, without cornuti, narrow at base, much swollen towards apex. The gnathos is a small, stout hook, bent to a quadrant, above its insertion a pair of chitinous protuberances (calluses), densely set with rather long hairs. Uncus slightly notched (Prep. 501a).

(193) ***Gelechia astragali* Stgr.**

Rayat, 27.vii. (6000 feet).

(194) ***Gelechia plutelliformis* Stgr.**

Bagdad, 2.vii., 14.vii., and 10.v. (oasis : Tigris island) ; Ahwaz, 4.ix., ex larva found on *Tamarix*.

(195) ***Gelechia magnetella* Stgr.**

A beautiful species in a bad specimen from Diana, 16.vi.

(196) ***Schützeia polychromella* Rbl.**

Ahwaz, 4.vi.

(197) ***Telphusa ostentella* Zy.**

Rayat, 27.vii. (6000 feet), two specimens, showing only the three yellow cross-bands without the dark spots, mentioned and illustrated in the original description ; but since Zerny particularly mentions such spotless specimens, there cannot be any doubt about the identification being correct. Was hitherto known from the Lebanon.

(198) ***Onebala lamprostoma* Z.**

Mosul, 11.x., several.



**(199) *Pseudoteleia squamodorella* Ams.**

One male from Bagdad, 11.iii. Was hitherto known only from the Jordan valley.

**(200) *Asbolistis chthoniopa* Meyr. (Exot. Micr. V, p. 49) (Plates X and XI, figs. 66, 80 and 81).**

Rayat, 12.vii., one male (type)

This wood-coloured, unmarked species is characterized in the wing venation by the fact that cu1 and cu2 originate from one point, while r4 and r5 are long-stalked. The median cell is divided in its exterior portion. The venation of the hind wing was not entirely distinguishable. M3 and cu1 emerge from one point, rr and m1 have a long stalk. I could not recognize exactly the upper end of the cell and the formation of the analis and axillaris.

Genital armature : Costa of valvae united by a rod with the roof of the tegumen. Valvae simple, without sacculus, vinculum truncate, aedeagus without cornuti, swollen before apex. Very peculiar is the formation of the uncus, especially clear in lateral aspect, and therefore, not fully represented in the illustration. The uncus is produced into a strongly curved, downward bent, strongly pointed hook, which bears in its basal part another pointed hook.

**OECOPHORIDAE****(201) *Pleurota kerbelella* spec. nov. (Plate IX, fig. 60).**

*Exp.* 22 mm. *Fore wings* pale grey, a very small dot before middle, a scarcely larger one at the apex of the cell, a line in the fold, costa darker grey, margin as a fine grey line, *hind wing* grey.

The darkening of the costa is rather sharply limited towards the wing, the line in the fold at 1/3 is short, the fringe is pale grey, as well as the palpi above, while they are darker at sides and beneath.

Genital armature : Valvae long and slender, anellus long, very fine, decidedly filiform, not band-shaped. Uncus very flat (Prep. 515a).

Locality : Kerbela desert, 28.iii., one male.

Genitaliter, the species comes very close to *generosella* Rbl., but has nothing in common with this species as to the design.

**(202) *Pleurota generosella* Rbl. (= *alexandrina* Meyr., Exot. Micr. V, p. 50) (Plate IX, fig. 61).**

Mosul, vi.35 : Kerbela desert, 2.-19.v., common.

The examination of the genital armature (Prep. 503) of *alexandrina* Meyr. revealed complete identity with *generosella* Rbl.

**(203) *Pleurota wiltshirei* spec. nov. (Plate IX, fig. 62).**

*Exp.* 20-22 mm. Fore wings yellow-grey to sand-coloured, without real design.

Ground colour of fore wing ochrous yellowish more or less evenly strewn with brownish scales. In more vividly coloured specimens the costa is paler, below it a linear brownish darkening from the base of the wing to tip. Hind wings grey. Palpi pale grey above, fused with greyish black at sides.

Genital armature: Uncus with sharp tip, gnathos moderately long, narrowest in the middle, valvae slightly undulated at interior margin. Aedeagus short, pointed, bent, anellus small.

Locality: Kerbela desert, common in March, but males only; Ahwaz, S. iv.

This species, dedicated to Mr. E. P. Wiltshire, is exteriorly most similar to *hebetella* Rag.

***Wiltshireia* gen. nov. (Plates X and XI, figs. 68 and 76).**

Venation of fore wings: sc very stout, r<sub>4</sub> and r<sub>5</sub> with long stalk, encircling the rounded tip. m<sub>2</sub> and m<sub>3</sub> originating almost from one point, ax with basal loop. Venation of hind wing: rr from the cell, not stalked with sc. m<sub>3</sub> and cu 1 from one point.

Antennae of male with two rows of fine cilia, basal joint enlarged, covered with forwardly directed scales. Rostrum well developed, set with scales at base. Palpi small, drooping, somewhat curved, joint 2 with strongly raised scales, ultimate joint small, with adpressed scales.

The new genus might be put to the Oecophorinae, for reason of the wing venation and the rostrum which is scaled at base, and it might be preliminarily placed near *Borkhausenia*, but a definite assignment will only be possible, if the examination of the shoulder-comb, and of the most closely related genera will have been effected.

I am naming the new genus after Mr. E. P. Wiltshire.

**(204) *Wiltshireia alba* spec. nov. (Plates X and XI, figs. 68 and 76).**

*Exp.* 10 mm. Fore and hind wings, inclusive of fringe, white without markings.

Frings on fore and hind wings subdivided by a series of broad, basal, white scales and long hair-like scales. Thorax, shoulder-covering and adpressed pubescence of head, as well as the scales at the basal joint of the antennae are white, the abdomen is brownish, in the female with much protruding ovipositor. On the under side, the fore wings are somewhat darker than the white hind wings.

Genital armature of male : Uncus broad, emarginated at the upper edge. Valvae apically with a round convexity, bearing numerous thorns and humps, and otherwise complicated in build, and subdivided, as can be best seen from the illustration. Aedeagus small, slender, without cornuti, bent for the length of a quadrant. Gnathos (G) developed as a large bag that is even more voluminous than the uncus. The whole armature is highly differentiated (Prep. 510a).

Locality : Ahwaz (desert), 16.x.38, one male and four females.

**(205) *Symmoca costobscurella* spec. nov. (Plates VIII and XII, figs. 55 and 100).**

*Exp. 14 mm. Fore wings yellowish white, ivory-coloured, costa at base of wing dark, a small dot shortly before middle, another of the same size at cell-end, and a somewhat larger, but less distinct one at interior angle.*

The species has pale fore wings that may be described as ivory (about as in *pallida* Stgr.). The costa is dark right at the wing base, the two dots shortly before middle and at the cell-end are very small, especially the first one, that at the interior angle larger, but less distinct. The fringe is nearly white, without partition line, but fused with a few dark scales. Hind wings towards apex and margin brownish grey, paler and somewhat transparent in basal portion. Fringe somewhat darker than that of the fore wings. Head and shoulder-covering as the fore wings, hairs on head almost white. Median joint of palpi brownish, terminal joint nearly white. Antennae bare, attaining  $4/5$  of costa. Under side of fore wing brownish, fringe nearly white as on upper side. Costa of hind wing and tip brownish. Inner margin and part of wing below cell whitish.

Venation of fore wing :  $r_3$  close by  $r_4 + r_5$ , the latter with long stalk, a transversal branch from the upper cell-limit to the common stalk of these veins,  $m_2$  from the upper corner of the cell, slightly curved,  $m_3$  and  $cu_1$  both from the exterior corner of the cell. The venation agrees, therefore, fully — as to the hind wing — with that illustrated by Spuler for *Symmoca*, but differs in the fore wing by the widely separated  $cu_1$  and  $cu_2$ .

Genital armature (Prep. 521a) : Costa of valva produced at base into a thumb-like, stout projection, valva somewhat widened exteriorly, sacculus short, pointed. Aedeagus rather heavy, with roughened chitinous band, representing the cornuti. Gnathos stout.

Locality : Hamidiyah near Ahwazi (Iran) riverside scrub, one male 14.x.38.

Genitaliter, the species belongs near *kalifella* Ams. By its basal darkening of the costa of the fore wing it resembles *sparsella* Joan. and *vitiosella* Z., but the remaining costal spots of these two species are wanting.

**(206) *Symmoca kalifella* spec. nov. (Plate VIII, fig. 56).**

*Exp.* 12 mm. *Fore wing* pale sand-coloured, without markings or more less densely strewn with darker scales in the exterior part of the wing.

This small species occurs in nearly unicolorously pale sand-coloured specimens and in such in which there are a terminal cell-point, and more or less numerous dark scales in the outer part of the wing. The fringe is even paler, without partition-line, the hind wings pale, somewhat darker towards apex. Antennae bare, pubescence on head pale, median joint of palpi somewhat darker than the nearly equally long ultimate joint. Under side of fore wing rather uniformly yellow-grey, hind wing paler.

Venation of fore wing : r1 very far towards base, r3 near r4 + r5 the latter with long stalk, r5 into tip, cu1 and cu2 coinciding, a transversal connexion between analis present, issuing from the point of origin of cu1 + cu2. The analis conspicuous only in its exterior part, ax with basal loop. Venation of hind wing : sc ending at  $\frac{4}{5}$  of costa, quite straight, rr and m1 with very long stalk, the latter originating from the upper corner of the cell. M3 and cu1 from one point.

Genital armature : Valvae at base of costa with a thumb-like protuberance as in *costobscurella* Ams., but this "thumb" much broader, its exterior margin excavated. Valvae widened exteriorly, sacculus developed only as a thickening of the basal interior margin, i.e., without free tip as in *costobscurella*. Basal portion of gnathos broad, median and apical part slender. Aedeagus without proper cornuti, instead, there is a roughened, short, slender band present.

*Locality* : Bagdad, 2.19.ix.; Kerbela desert, 1.-3.v., seven males.

The species is well characterized by the cross-connexion between analis and lower cell-vein (i.e. as in *aragonia* Ams. and *bubulcellodes* Ams.), but its definite position in the system can only be given, when the complex genus *Symmoca* will have been divided.

**(207) *Symmoca sparsella* Joan.**

Shaqlawā, 11.viii.; Rowanduz, 8.x.; Diana, 6.x.

Joannis states in his original description that the hairs of the head are silver-white. This agrees with a specimen from Palestine, but in another specimen from the same locality, being no doubt also a true *sparsella*, the hairs of the head are greyish yellow, as it is the case in the specimens from Irak.

**(208) *Oegoconia quadripuncta* Hw.**

Bagdad, 27.xi. (orchards).

**(209) *Apiletria purulentella* Stt. (= *Aretascetis endoperena* Meyr.).**

Rayat, 24.vi.; Diana, 14.vi.; Maidan-i-Naftun, 5.vi.; Mosul desert, 3.vi.; Bagdad, 31.v.; Kerbela desert, 5.v.; Jindian (Kurdistan), 7.vi. (3000 feet); Luristan, 11.vi. (3000 feet), common.

**COLEOPHORIDAE****(210) *Coleophora cerinaula* Meyr. (Exot. Micr. V, p. 63).**

Diana, 19.v., one female (type).

The type is in deplorable condition, making any recognition of the species impossible. The species had better be cancelled.

**(211) *Ensepastra machimopis* Meyr. (Exot. Micr. V, pp. 63 and 130) (Plate X, fig. 67).**

Diana, 19.v., one male (type).

The specimen is in as hopeless condition as the foregoing; it is strange that Meyrick could base a new species on such a miserably preserved specimen. Only the fact that in this specimen the abdomen is yet present and that it is a male, "saves" this species. The genital armature shows all the characteristics of the genus *Coleophora* (Prep. 509a).

**SCYTHRIIDAE****(212) *Syringopais temperatella* Led. (= *Nochelodes xenicopa* Meyr., Exot. Micr. II, p. 367).**

Diana, 3.v., several.

**(213) *Scythris bagdadiella* spec. nov. (Plates X and XII, figs. 69 and 101).**

*Exp. 13 mm. Fore wings dark grey in basal part, pale grey in exterior part, with a white, interrupted line, semicircularly arched from interior margin, and sometimes only slightly indicated.*

This species is from the base of the wing to about middle dark to blackish grey. This dark part surpasses somewhat the base of the fringe of the interior margin, but runs at the costa only up to 1/2. In the middle of this dark grey portion begins at 1/4 of the inner margin a semicircularly arched, purely white line that is, however, not sharply defined and partly interrupted. This white semicircle runs up to the middle of the wing, ending somewhat above the beginning of the fringe of the interior margin, in the fold. The dark grey basal part fuses without sharp limitation into the pale exterior part. Fringe pale grey. Hind wing grey. Head, thorax and shoulder-coverings as fore wings. Antennae bare. Ultimate joint of palpi as long as joint 2, grey. The venation was not distinctly visible on the de-scaled wing. The cell goes exceptionally far outward, attaining nearly the exterior margin.



Genital armature : With direct inclusion of the sternite and tergite of segment XI. The sternite has two long points, a rather long, slender, rounded chitinous branch, and at the lower middle a pair of outwardly semicircularly limited small plates. The tergite is notched at apex, from its middle a pair of fine, armlike bands bend downward. The interpretation of the genital apparatus proper has not yet proved possible. In the illustration it is (B) given in lateral aspect' (Prep. 517).

Locality : Bagdad, 16.iv., two males and one female.

With the unmarked, whitish yellow *Sc. lychnitis* Meyr., described from Basra, *bagdadiella* has nothing in common. The systematic position of the species has yet to remain unsettled.

**(214) *Metzneria castiliella* Möschl.**

Nejf, 26.iii. (shores of salt lake).

The determination was made without genital preparation; it is, therefore, not quite certain. This species and the species of the relationship of *Metzneria* I list here under the Scythriidae, since Börner has proved that *Metzneria*, *Isophrictis*, a.s.o., have no shoulder-comb, and thus belong here and not to the Gelechiidae.

**(215) *Metzneria diamondi* spec. nov. (Plate IX, fig. 63).**

Exp. 17-18 mm. Fore wing pale yellowish with marginal line, dot of fold and of cell-end, and with darkening of the basal costa. Hind wing pale grey.

This species comes very near to *incognita* Wlsm. and *aspretella* Led. It is characterized by the pale general appearance, especially by the very pale hind wings. In this it is at once distinguished from *incognita* and *aspretella*, both having dark hind wings. In *incognita*, which has the ground colour of fore wing as in *diamondi*, the dark hind wings strongly contrast against the pale fore wings, in *diamondi* this contrast is non-existent. Otherwise, *diamondi* is often nearly without markings; there are specimens showing only the marginal line distinctly.

Genital armature : Uncus distinctly emarginated, valva with small point, valvula rounded, without hairs or thorns, aedeagus with two pointed, short cornuti.

Locality : Kerbela desert, 28.iii., nine males.

I am dedicating this species to Mr. Diamond who actively collected in the Kerbela desert for Mr. Wiltshire.

***Bagdadia* gen. nov.**

Venation of fore wing : r2 far apart from r1, r4 and r5 stalked, the latter as long as the free veins, m1 right near r4 + r5, m2 very close to

m3, cu1 far from cu2, ax with basal loop. Cell open. Venation of hind wing : sc at 2/3 into the fore margin, r1 and r2 with long stalk, m2 slightly curved, far from m1; m2 and m3 close together, cu1 far from cu2. Apex of hind wing but little produced. Palpi protruding, slightly bent upward, joint 2 with stout, triangular tuft of scales, ultimate joint as long as second, adpressedly scaled, needle-shaped.

Genital armature : Belonging to the *Metzneria-Isophrictis* type.

The new genus belongs in the *Metzneria-Isophrictis-Megacraspedus*-relationship, but differs from all known genera by the striking venation of the hind wing. r1 and rr is long-stalked, while normally, in all related genera, sc and r1 coincide. The triangular tuft of the second palpal joint separates at once the new genus from *Metzneria*, while *Megacraspedus* differs by the stalked m1 of the fore wing, and has a much more strongly produced tip of the hind wing. Whether *Bagdadia* has a shoulder-comb could not be ascertained.

(216) ***Bagdadia irakella* spec. nov., Typus generis (Plates IX, XI and XII, figs. 64, 78, 79 and 99).**

*Exp.* 11-12 mm. Fore wings mixed with pale and dark grey, a black longitudinal line in the fold. Hind wing grey, antennae annulated with pale and dark grey, terminal joint of palpi twice annulated pale-dark. Ovipositor of female distinctly protruding.

Genital armature as in *Metzneria*. Valvula rather large, rounded, without thorns or hairs. Uncus rounded, aedeagus slender, cornuti proper wanting, only a chitinous darkening noticeable at apex.

The small species is of little striking coloration. Only the black longitudinal line in the fold, shortly before middle of wing stands out. The grey fringe shows a very fine partition-line. Fringe of hind wing not divided. On the under side the fore wings are unicolorously grey, fringe distinctly paler. Tarsi annulated.

Locality : Bagdad, 31.iii.; Kerbela desert, 28.iii., one female and two males. Left wings of female type missing.

#### HYPONOMEUTIDAE

(217) ***Plutella megapterella* Bentinck.**

Nejf, 26.iii., one female.

(218) ***Plutella macuilpennis* Curt.**

Bagdad, 21.iii., and 16.iv.; Kerbela desert, 28.iii.; Ahwaz, 7.iv.

(219) ***Cerostoma indecorella* Rbl.**

Kerbela desert, 28.iii.

**TINEIDAE**

**(220) *Trichophaga abruptella* Woll.**

Bagdad, 25.x. (orchards); Ahwaz, 8.v. (desert hills, circa 3000 feet; settled on underside of rock slab).

**(221) *Myrmecozela diacona insignis* Am (= *Cronodoxa stichograpta* Meyr., *Exot. Micr.* V, p. 54).**

Bagdad, 12.iii., several.

**(222) *Monopis meleodes* Meyr. (*Exot. Micr.* II, p. 84).**

Diana, 19.v., one female, unfortunately wholly mouldy and unrecognizable, determined by Meyrick himself.

**(223) *Catabola aegyptiella* Rbl.**

Berserini, 9.x., one female.

**(224) *Tinea irakella* spec. nov. (Plate X, fig. 70).**

*Exp.* 17 mm. *Fore wings* grey brown, without markings. *Antennae* sharply annulated with black and white, attaining  $2\frac{2}{3}$  of length of fore wing.

This species is wholly without markings, but has sometimes in the fold and at the apex of the cell some dark scales. Fringe as fore wing, hind wing somewhat darker than fore wing, fringe here with darker basal shade. The antennae are strikingly annulated with black and white, each joint being distinctly circularly ciliated at apex, each cilia as long as breadth of joint, palpi protruding, joint 2 long, but very loosely set with hairs, the single hairs white grey at base and tip, darker in the middle, last joint short, adpressedly scaled, straight or somewhat drooping. Frons and hairs of collar as the pubescence of the second palpal joint. Venation: All veins of fore and hind wing without stalks and issuing from cell separately.

Genital armature: Uncus on either side with a sharp, curved, forwardly directed hook, in the middle with a stout, rounded convexity on either side, the middle itself strongly impressed. Valvae without special characters, produced into a thorn at base, vinculum produced into a very long, very slender thorn. Aedeagus only slightly broader than the former, evenly slender and without cornuti (Prep. 513).

Locality: Qaraghan, 13.iii., three males.

Exteriorly the species comes close to *T. cubiculella* Stgr., but is more brownish than this species. Unfortunately, Staudinger does not mention anything about the formation of the antennae and palpi of his species.

(225) *Rhodobates (Talaeporia) atactopis* Meyr. (Exot. Micr. V, p. 56) (Plate X, fig. 74).

This species, described after one male from Bagdad, was erroneously placed in *Talaeporia* by Meyrick. It has nothing in common with it, but belongs in the close neighbourhood of *Rh. transjordana* Ams. and *pallipallus* Rbl., indicated by the male genitalia and the winged female. The latter, hitherto unknown, is of the same design as the male, i.e., with little apparent reticulation and without any other markings. Only in the fold, there appears a short, dark, longitudinal stria. The ovipositor far surpasses the abdomen. Of the venation, r4 and r5 have a long stalk, there exists an accessory cell, and the cell of the hind wing is divided. The species is best distinguished from *transjordana* Ams. by the genital armature (cf. Amsel, Mitt. Zool. Mus. Berlin, 20, T. 15, fig. 19), and by the long stalk of the veins r4 and r5, which on the contrary arise free from the cell in *transjordana*. As to the genitalia, *transjordana* has, besides other details, no emargination of the lower margin of the valvae before apex; this is characteristic of *atactopis*.

Locality: Bagdad, 4.iii., 18.iii., and 22.iii.; Amadia, 28.v.

(226) *Hapsifera asiatica* spec. nov. (Plate X, fig. 72).

Hardly separable from *luridella* Z. in size and design, but antennae attaining only up to  $3/4$  of costa, while they surpass tip of costa in *luridella*.

Differing in the genital armature: While in *luridella* (Plate X, fig. 71, after a specimen from Carmel, Palestine) the aedeagus is as long as the valvae, it is in *asiatica* only  $3/4$  of valvae length. In *luridella*, the aedeagus is distinctly narrower and slenderer in its upper part. In the species of *Hapsifera* there is a peculiar connexion between the middle of the valvae and the anellus plate (P). This plate, being attached by two slender ridges at the middle of the valvae so that the usual opening of the genital armature from the ventral side is impossible without destroying it, it is attached in *asiatica* in such a way that only  $1/3$  of the aedeagus, projects beyond it, while in *luridella*  $2/3$  so projects.

Locality: Kisl Gusars, Buchara, two males, one female.

To this *asiatica* I refer with some hesitation, a series of specimens from the following localities:

Ahwaz, 6.iv.; Salehabad, near Dizful, 4.iv.; Diana, 19.vi.; Kerbela desert, 28.iii.; Bagdad, 24.iii., 15.v., of which the specimen from the Kerbela desert differs in the genitalia only in having the aedeagus at base less swollen than in the true *asiatica* from Buchara.

Since the complicated properties of the genital armature of the *Hapsifera* species will only be finally elucidated if sufficient material will be at

hand, and lateral as well as dorsiventral preparations will be made thereof, I cannot venture to decide with certainty, if individual, subspecific or even specific differences exist. The examination of the armatures in ventral aspect is not entirely satisfactory in these species, as it is scarcely possible to open them fully. It will be necessary, to make future examinations chiefly in lateral aspect. Moreover, the similar structure of the dorsum of the tegumen and the uncus of *Rhodobates*, points to a close relationship between the two genera. In the illustrations these two parts are omitted, because they are irrelevant to the separation of the species.

**(227) *Hapsifera kerbelella* spec. nov. (Plate X, fig. 73).**

*Exp.* 25-32 mm. Head palpi and fore wing white-grey, in the cell simply grey, without brown or ochreous colouring. Position of the raised scales as in *luridella* Z., but more weakly developed. Hind wings grey. Antennae only reaching half of costa.

The species is remarkable by its white-grey coloration, lacking all brown or ochreous shades, as well as by its size and the short antennae. The costa is nearly white or whitish grey up to the cell, the inner margin chiefly white-grey, as well as the margin. In general, only the cell is of normal grey colour. The extension of the white-grey or normal grey areas varies considerably. At the exterior third to the costa and around margin, there are a number of little conspicuous, raised, brown tufts of scales. Fringe white-grey. Hind wings grey, fringe pale yellowish grey. Head, thorax and frons white-grey, palpi white-grey, median joint rather adpressedly scaled, ultimate joint short. Basal antennal joint enlarged, with white scales, and with comb of bristles. Antennae only up to  $\frac{1}{2}$  of costa or little more, not annulated, pale grey-brown. Under side of fore wing dark grey, with much contrasting white-grey fringe. Hind wing paler grey, with nearly equally white-grey fringe. The venation of the wing is remarkable, as  $cu_1$  and  $cu_2$  originate from one point, and in the stalk of  $r_4 + r_5$  being very long. It issues from this vein immediately after the origin of  $r_3$ , i.e., nearly from the upper corner of the cell.

Genital armature : Aedeagus of  $\frac{4}{5}$  the length of the valvae. Anellus plate (P) broad, straightly truncate in front. Valvae produced at base into a long, pointed branch (S).

Locality : Kerbela desert, 11.-15.iv. and 2.v., three females and two males.

The species is distinguished from *luridella* Z. by its larger size (*luridella* 20-24 mm.), the short antennae, and from all other species by its striking white-grey total coloration. It cannot be identical with *baliopsamma* Meyr. (Exot. Micr. V, p. 475) either, a species that was described after



two males from Mesopotamia. The latter is only 23-25 mm. wide, its colour is described as "pale brownish-ochrous" and it is said to have "numerous dark fuscous dots and small spots along costa". Finally, veins 2 and 3 (cu1 and cu2) are said to be separated, whilst they emerge from one point in *kerbelella*. *H. palaestinensis* Rbl., which according to Caradja is a synonym of *eburnea* Butl., has (according to the illustration in Spuler) cu1 and cu2 of the fore wing stalked, and the common stalk of r4 + r5 much shorter than in *kerbelella*, where it emerges right after the origin of r3. *H. albicapilla* Trti., 1926 (*Atti Soc. Ent. Sc. Nat.* LXV, p. 76), described from the Cyrenaica, comes nearest to the new species. This species, however, is only 21-26 mm. wide, its ground colour is described as "bianchastro lutescente, cosparso di una spolveratura bruno oscura". The under side of the fore wings is described as "bianchastro lutescente con venatura saliente concolore, ma terminanti più oscura entro la linea limbale segnata da un filo netto brunico". These descriptions do not agree with *kerbelella*.

#### ADELIDAE

(228) *Nemotois antilyca* Meyr. (*Exot. Micr.* V, p. 42) (Plate X, fig. 75).

Diana, 20.iv. and 3.v., several.

The species has hind wings of the male sex white and transparent, with narrow, dark margin, the females have hind wings dark and somewhat paler only at base.

Genital armature: Vinculum very long produced becoming narrower towards base, then truncate. Aedeagus very long and slender, triangularly widened at base. Valvae interiorly with a pair of irregular ridges.

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## PLATES I-XII

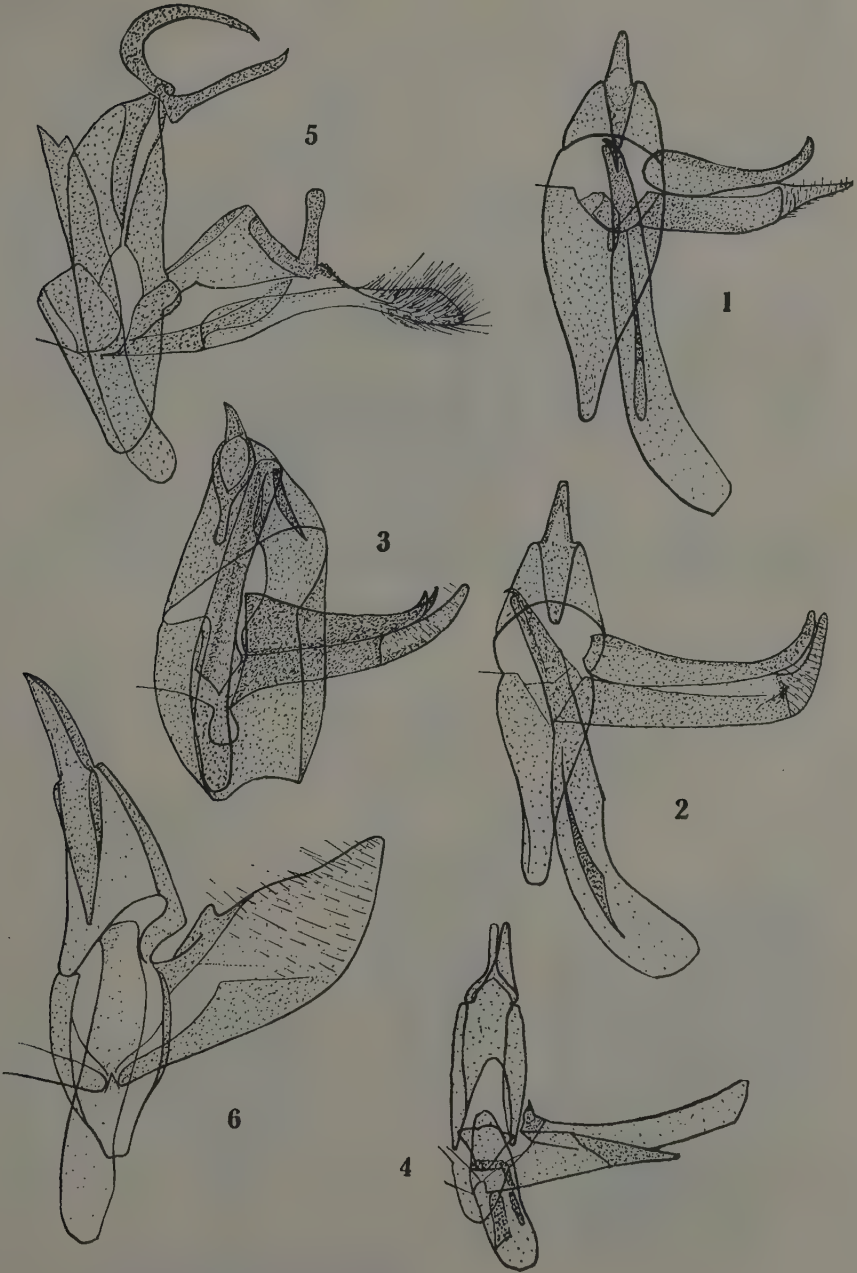
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**Explanation of Plate I**

- Fig. 1 : *Crambus desertellus* Led. (Tel-Aviv). Prep. 466.  
Fig. 2 : *Crambus desertellus* Led. (Diana, Irak). Prep. 468.  
Fig. 3 : *Crambus stenopterellus* Ams. (Mosul), type. Prep. 469.  
Fig. 4 : *Eromene rayatella* Ams. (Rayat, Irak), type. Prep. 322.  
Fig. 5 : *Chiloides (Chilo) hederalis* Ams. (Hamidiyah, Iran). Prep. 418a.  
Fig. 6 : *Diatraea (Chilo) luteella* Motsch. (Rowanduz, Irak), det. Meyrick.

Explanation of Abbreviations : Prep. = Preparation of the genital armature

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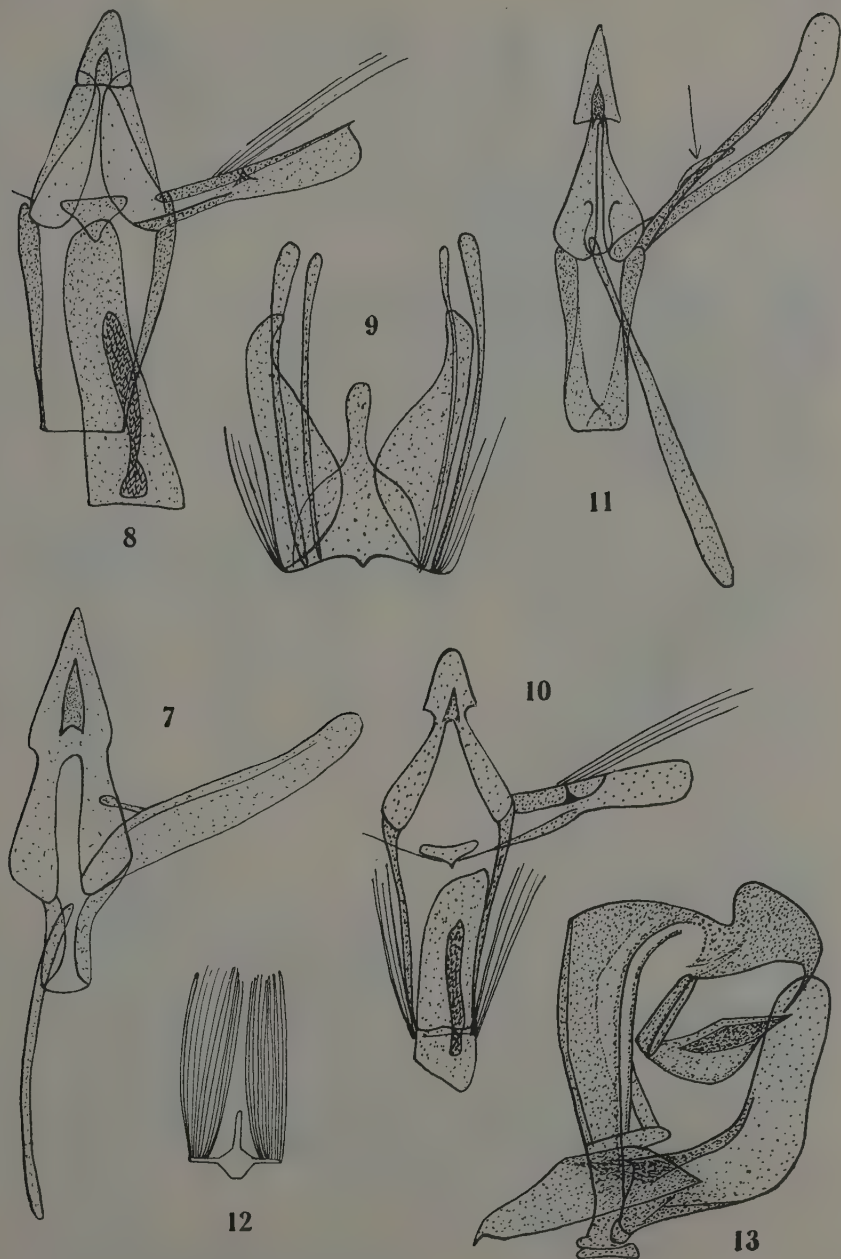
**Explanation of Plate II**

- Fig. 7 : *Heterographis concavella* Ams. (Bagdad), paratype. Prep. 440.  
Fig. 8 : *Ancylodes pallens* Rag. (Tozeur, Tunisia), Prep. 461.  
Fig. 9 : *Ancylodes pallens* Rag. (Tozeur, Tunisia). Prep. 461, coremeta.  
Fig. 10 : *Ancylodes kerbelella* Ams. Kerbela desert, Irak), paratype. Prep. 460  
Fig. 11 : *Cornigerula eremicola* Ams. (Dead Sea), paratype. Prep. 444.  
Fig. 12 : *Cornigerula eremicola* Ams. (Dead Sea), paratype. Prep. 444, coremeta.  
Fig. 13 : *Ancylolomia irakella* Ams. (Diana, Irak), type. Prep. 483a.

Explanation of Abbreviations: Prep. = Preparation of the genital armature. Coremeta are termed the modified scales of sternites VII or VIII as a whole. They are often as characteristic as the genital armature.

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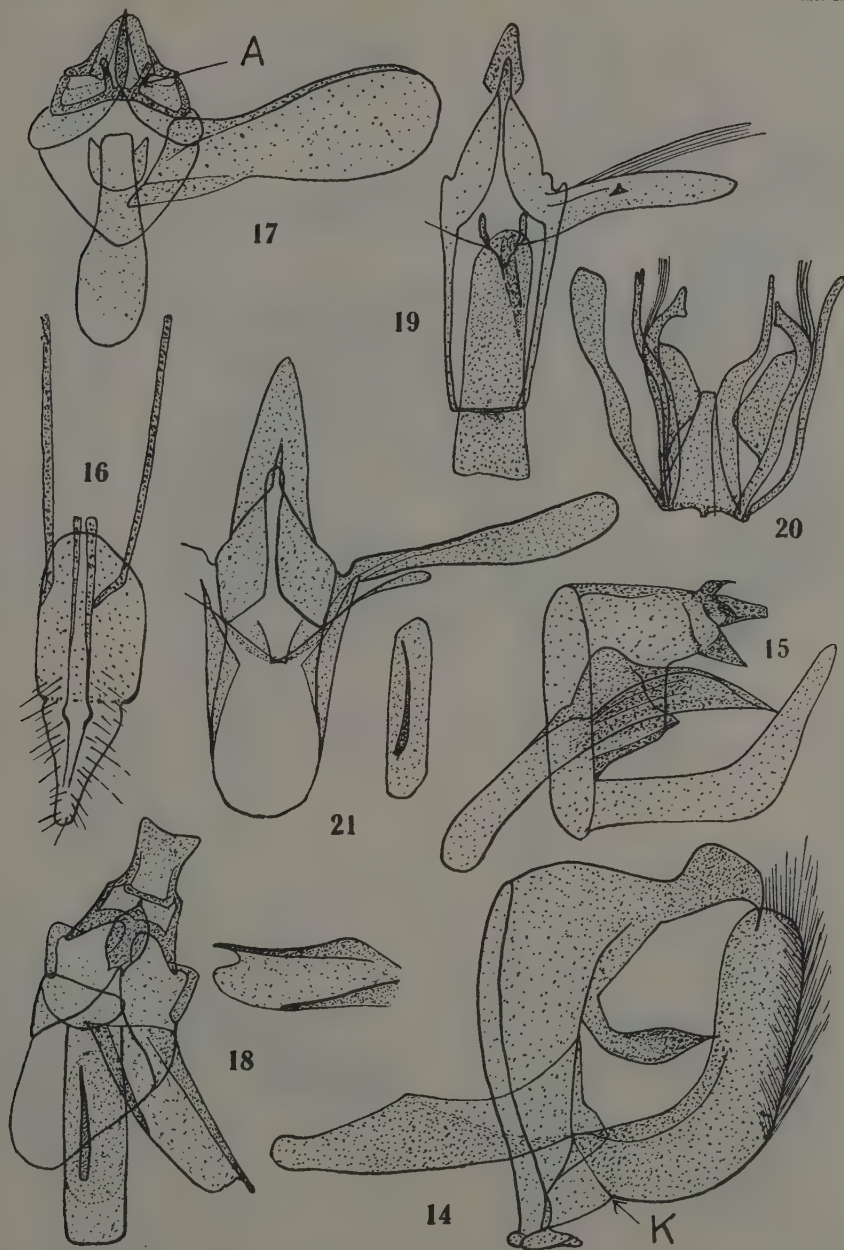


## Explanation of Plate III

- Fig. 14 : *Ancylolomia tentaculella* Hb. (Mostar). Prep. 472.  
Fig. 15 : *Tollia* (*Ancylolomia*) *pectinatella* Z. (Mosul). Prep. 481a.  
Fig. 16 : *Emmalocera leucosarca* Meyr. (Rayat, Irak), type. Prep. 486a.  
Fig. 17 : *Ahwazia albicostalis* Ams. (Qaraghan, Irak), paratype. Prep. 485a.  
Fig. 18 : *Pristophora alphetopis* Meyr. (Rayat, Irak), type. Prep. 438a, left valva separately.  
Fig. 19 : *Epischnia arabica* Ams. (Ahwaz, Iran), paratype. Prep. 463a.  
Fig. 20 : *Epischnia arabica* Ams. (Ahwaz, Iran), paratype. Prep. 463a, coremeta.  
Fig. 21 : *Tephros stenopterella* Ams. (Jordan), type. Prep. 434.

Explanation of Abbreviations : Prep. = Preparation of the genital armature. Coremeta are termed the modified scales of sternites VII or VIII as a whole. They are often as characteristic as the genital armature.

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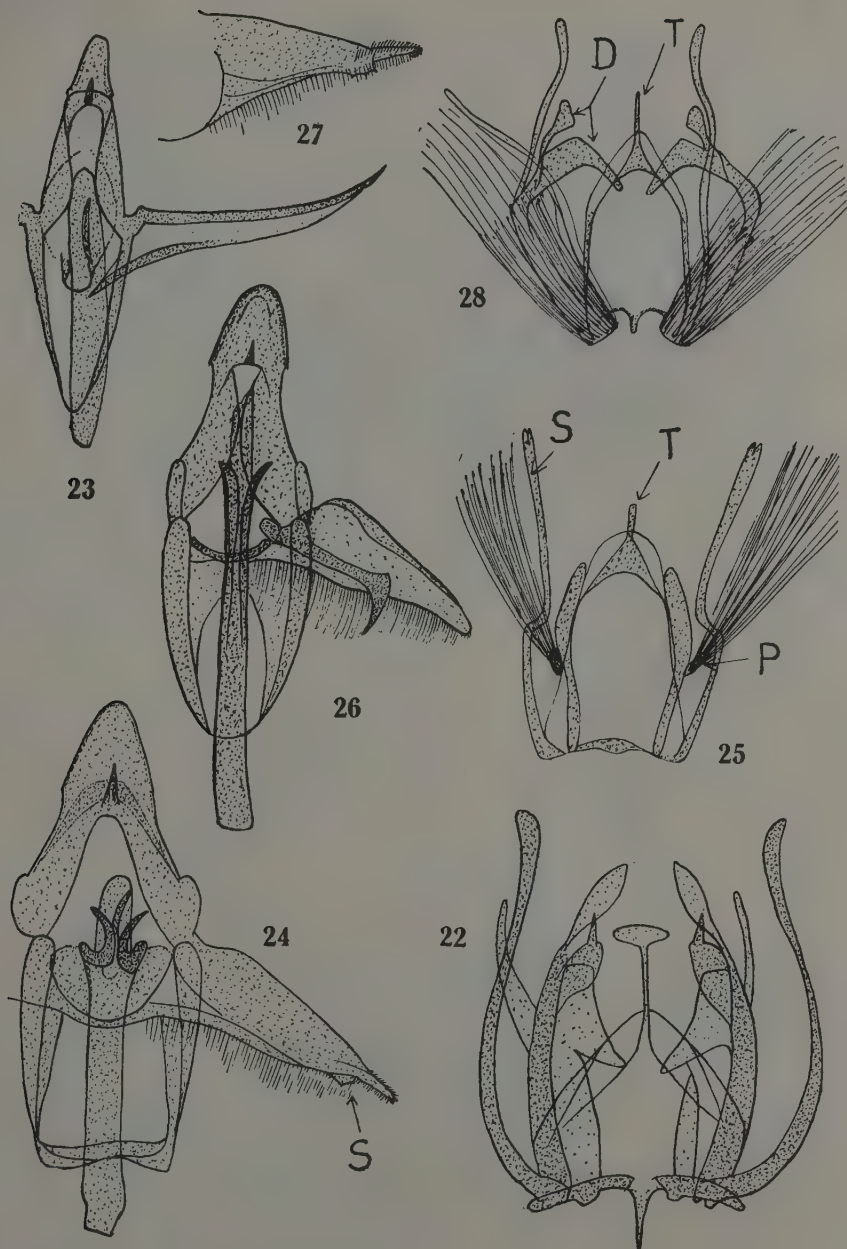


**Explanation of Plate IV**

- Fig. 22 : *Tephris stenoplerella* Ams. (Jordan), type. Prep. 434, coremeta.  
Fig. 23 : *Salebria argyrophanes* Meyr. (Shaqlawah, Irak), type. Prep. 458a.  
Fig. 24 : *Salebria brephiella* Stgr. (Corsica). Prep. 447.  
Fig. 25 : *Salebria brephiella* Stgr. (Corsica). Prep. 447, coremeta.  
Fig. 26 : *Salebria zelicella* Obth. (Tel-Aviv). Prep. 445.  
Fig. 27 : *Salebria coremetella* Ams. (Tripolitania), type. Prep. 448, valva.  
Fig. 28 : *Salebria coremetella* Ams. (Tripolitania), type. Prep. 448, coremeta.

Explanation of Abbreviations : Prep. = Preparation of the genital armature. Coremeta are termed the modified scales of sternites VII or VIII as a whole. They are often as characteristic as the genital armature.

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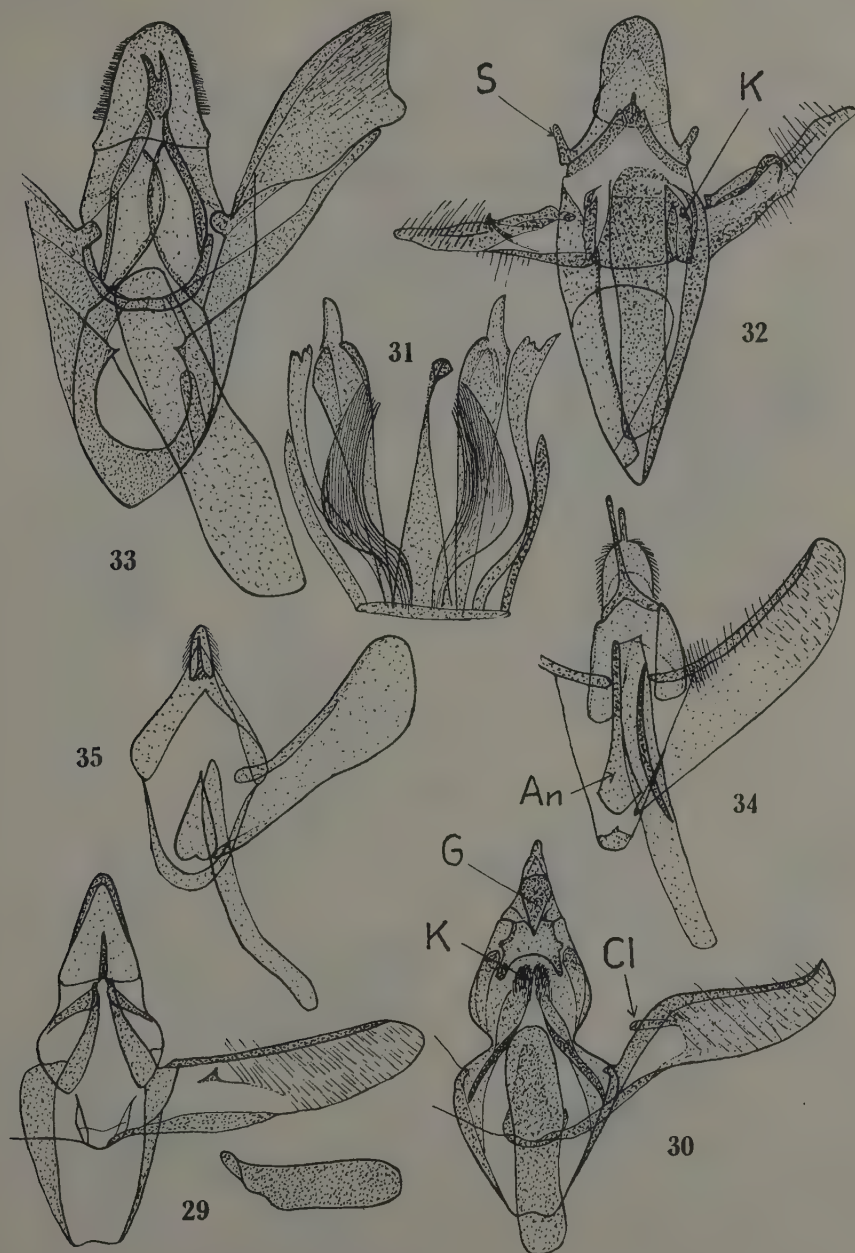


**Explanation of Plate V**

- Fig. 29 : *Nephopteryx eustatica* Meyr. (Rayat, Irak), type. Prep. 464a.  
Fig. 30 : *Ichorarchis iozona* Meyr. (Diana, Irak), type. Prep. 459a.  
Fig. 31 : *Ichorarchis iozona* Meyr. (Diana, Irak), type. Prep. 459a.  
Fig. 32 : *Ptyonocera proteroleuca* Meyr. (Rayat, Irak), type. Prep. 457a.  
Fig. 33 : *Myeloides margaritella* Trti. (Kerbela desert). Prep. 436.  
Fig. 34 : *Scoparia phycophanes* Meyr. (Rowanduz, Irak), type. Prep. 450a.  
Fig. 35 : *Scoparia piroformis* Ams. (Berserini, Irak), paratype. Prep. 454a.

Explanation of Abbreviations : Prep. = Preparation of the genital armature.

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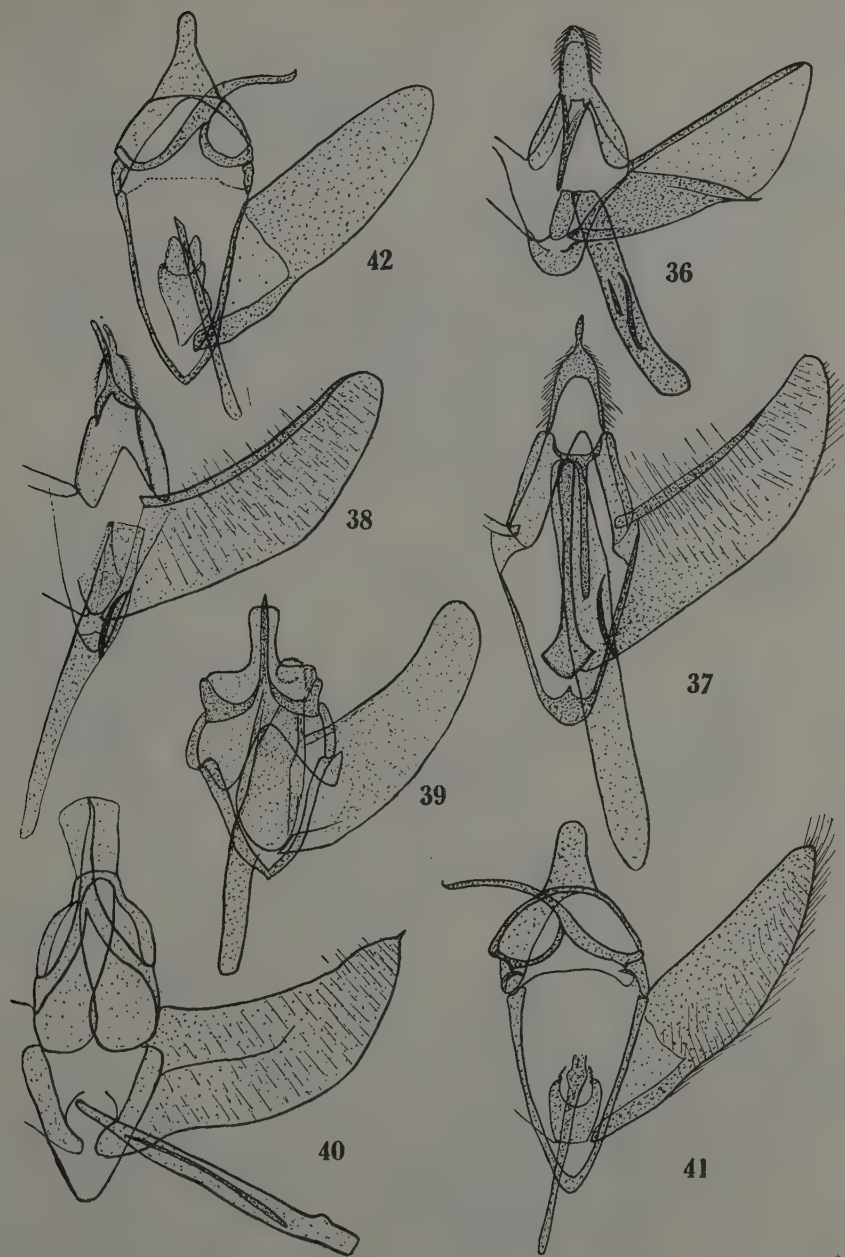


**Explanation of Plate VI**

- Fig. 36 : *Scoparia saerdabella* Osth. (Elburs mountains), cotype. Prep. 455.  
Fig. 37 : *Scoparia rupestris* Meyr. (Salehabad near Dizful). Prep. 453a.  
Fig. 38 : *Scoparia rupestris* Meyr. (Rayat, Irak), type. Prep. 451a.  
Fig. 39 : *Constantia wiltshirei* Ams. (Kerbela desert, Irak), paratype. Prep. 341.  
Fig. 40 : *Lepidogma wiltshirei* Ams. (Bagdad), paratype. Prep. 439a.  
Fig. 41 : *Bostra minimalis* Ams. (Mosul desert), type. Prep. 427a.  
Fig. 42 : *Bostra atomalis* Ams. (Ahwaz, Iran), paratype. Prep. 429a.

Explanation of Abbreviations : Prep. = Preparation of the genital armature.

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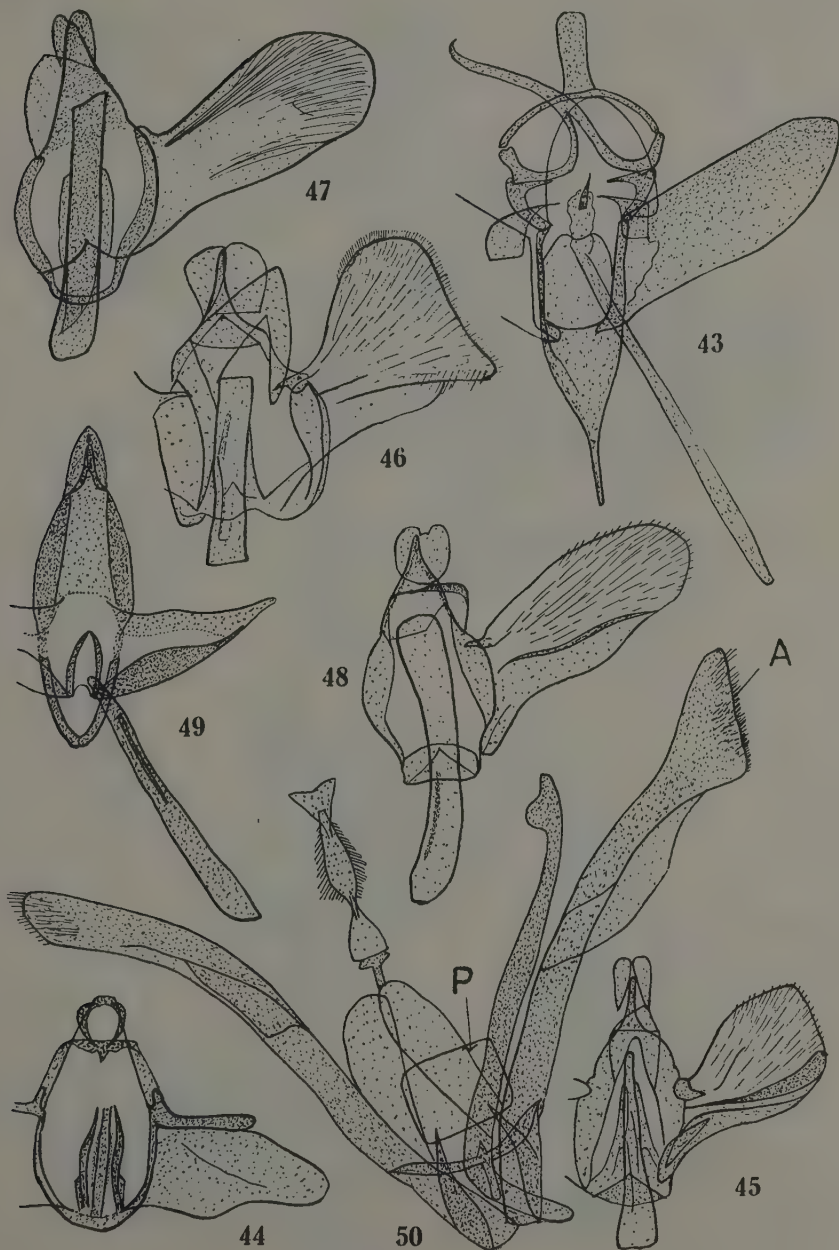
**Explanation of Plate VII**

- Fig. 43 : *Bostra marginalis* Rthsch. (Bagdad). Prep. 426.  
Fig. 44 : *Krombia pulchella* Ams. (Ahwaz, Iran), type. Prep. 428a.  
Fig. 45 : *Tegostoma comparalis* Hb. (Sardinia). Prep. 297.  
Fig. 46 : *Tegostoma mossulalis* Ams. (Mosul), type. Prep. 298.  
Fig. 47 : *Tegostoma ahwazalis* Ams. (Ahwaz, Iran), type. Prep. 465a.  
Fig. 48 : *Kerbela monotona* Ams. (Kerbela desert, Irak), paratype. Prep. 299.  
ja Fig. 49 : *Cypholomia haplogramma* Meyr. (Mosul desert), type. Prep. 422a.  
Fig. 50 : *Agdistis bagdadiensis* Ams. (Bagdad), type. Prep. 513a.

Explanation of Abbreviations    Prep. = Preparation of the genital armature.

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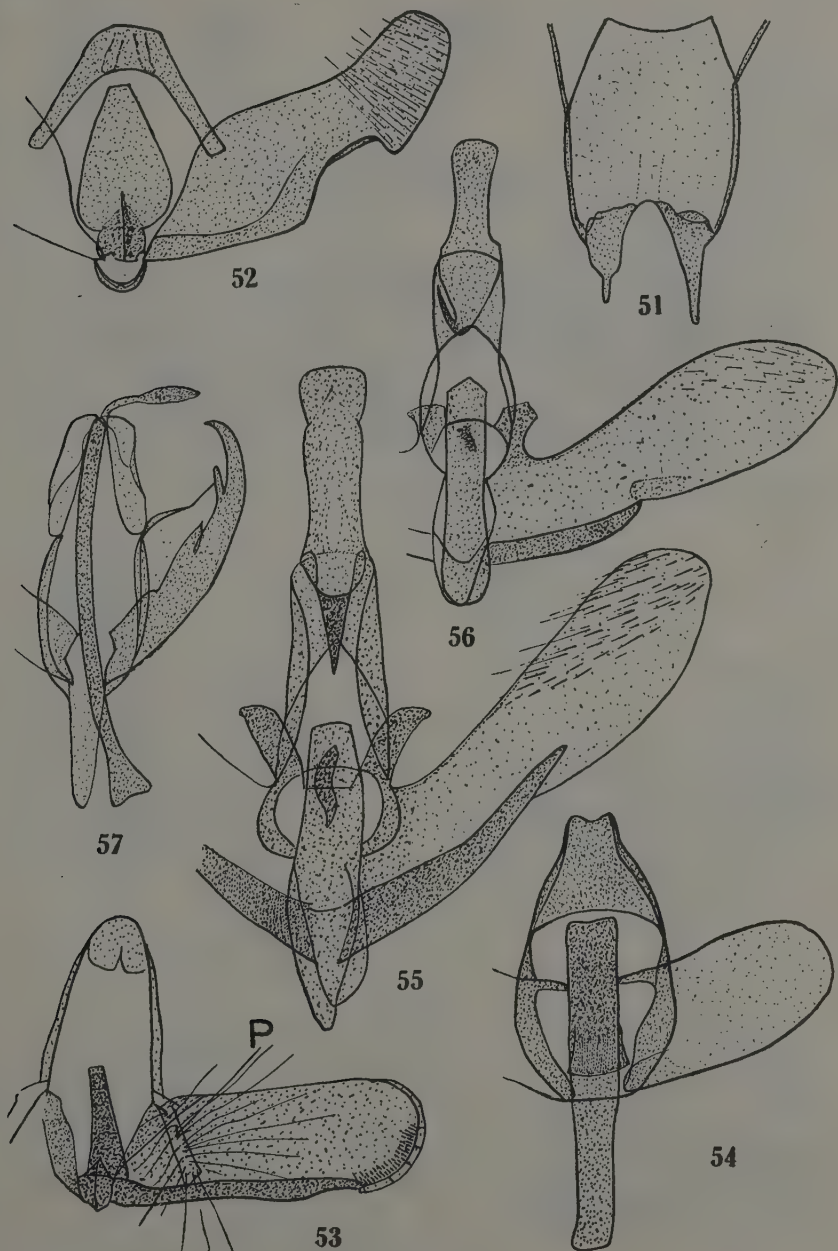


**Explanation of Plate VIII**

- Fig. 51 : *Agdistis bagdadiensis* Ams. (Bagdad), type. Prep. 513a, sternite IX.  
Fig. 52 : *Eucosma esmodes* Meyr. (Diana, Irak), type. Prep. 512a.  
Fig. 53 : *Semasia bagdadiana* Ams. (Bagdad), paratype. Prep. 518.  
Fig. 54 : *Atychia mesopotamica* Ams. (Diana, Irak), type. Prep. 508a.  
Fig. 55 : *Symmoca costobscurella* Ams. (Hamidiyah, Iran), type. Prep. 521a.  
Fig. 56 : *Symmoca kalifella* Ams. (Bagdad), paratype. Prep. 522.  
Fig. 57 : *Depressaria obolucha* Meyr. (Ser Amadia, Irak), type. Prep. 511a.

Explanation of Abbreviations : Prep. = Preparation of the genital armature.

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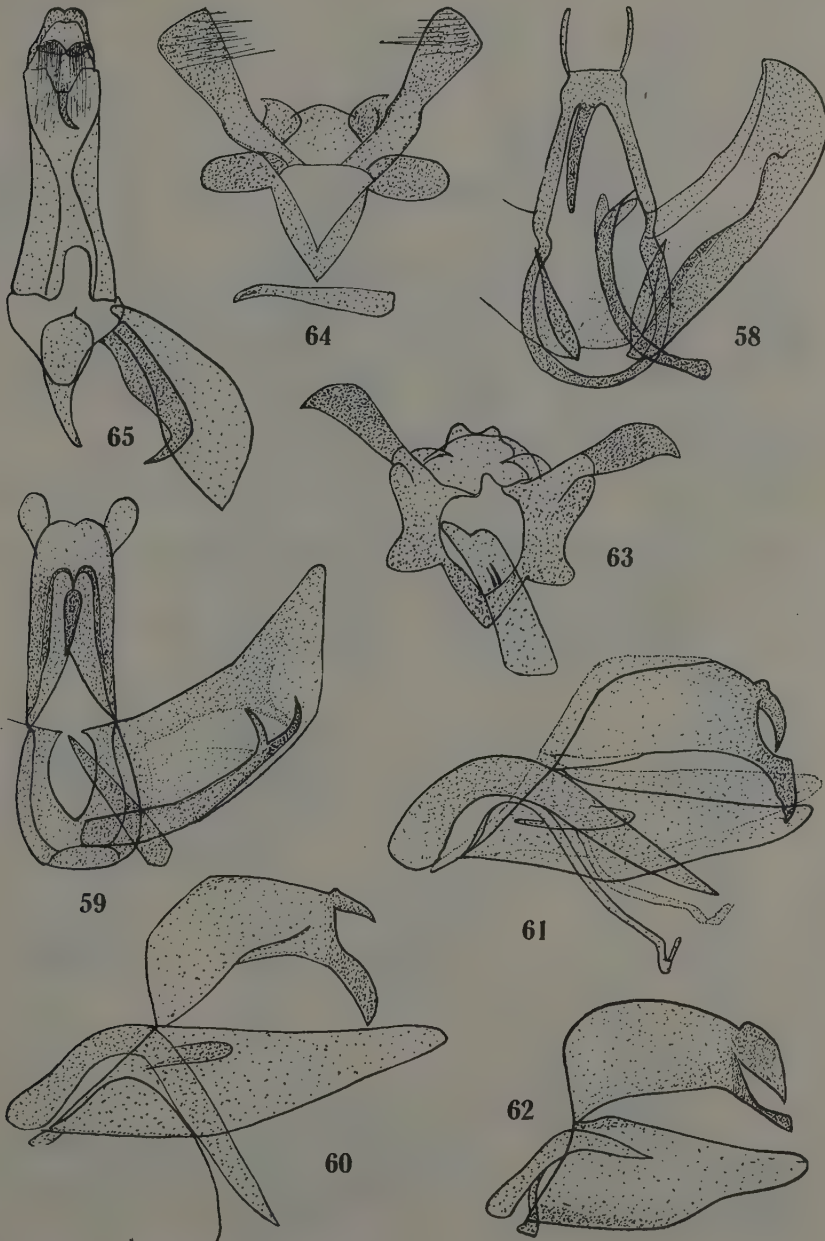


**Explanation of Plate IX**

- Fig. 58 : *Depressaria mesopotamica* Ams. (Maidan-i-Naftun, Irak), type. Prep. 499a.  
Fig. 59 : *Depressaria xyleula* Meyr. (Rayat, Irak). Prep. 498a.  
Fig. 60 : *Pleurota kerbelella* Ams. (Kerbela desert, Irak), type. Prep. 515a.  
Fig. 61 : *Pleurota generosella* Rbl. (Kerbela desert, Irak). Prep. 503.  
Fig. 62 : *Pleurota wiltshirei* Ams. (Ahwaz, Iran), paratype. Prep. 507a.  
Fig. 63 : *Metzneria diamondi* Ams. (Kerbela desert, Irak), paratype. Prep. 514.  
Fig. 64 : *Bagdadia irakella* Ams. (Kerbela desert, Irak), paratype. Prep. 516, aedeagus separately.  
Fig. 65 : *Gelechia bathrosticka* Meyr. (Mosul desert, Irak), type. Prep. 510a.

Explanation of Abbreviations : Prep. = Preparation of the genital armature.

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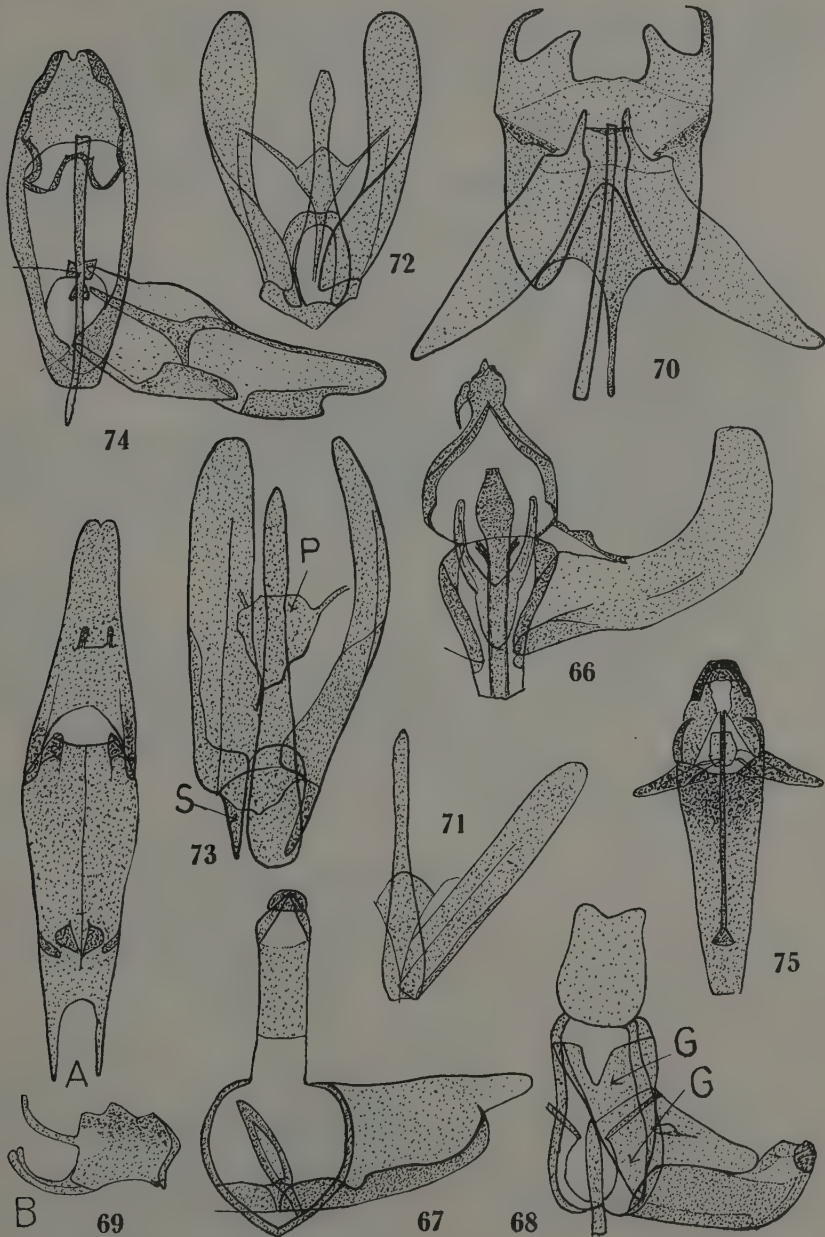


**Explanation of Plate X**

- Fig. 66 : *Asbolistis chthoniopa* Meyr. (Rayat, Irak), type. Prep. 502.  
Fig. 67 : *Enscepastra machimopis* Meyr. (Diana, Irak), type. Prep. 509a.  
Fig. 68 : *Wiltshireia alba* Ams. (Ahwas, Iran), type. Prep. 510a.  
Fig. 69 : *Scythris bagdadiella* Ams. (Bagdad), paratype. Prep. 517 : (A) the sternite (tergite) belonging to the genital armature, opened; (B) the genital armature itself (lateral aspect).  
Fig. 70 : *Tinea irakella* Ams. (Qaraghan, Irak), paratype. Prep. 513.  
Fig. 71 : *Hapsifera luridella* Z. (Carmel, Palestine), valva only, and aedeagus.  
Fig. 72 : *Hapsifera asiatica* Ams. (Kisil Gusars, Buchara), valvae and aedeagus in ventral aspect.  
Fig. 73 : *Hapsifera kerbelella* Ams. (Kerbela desert, Irak), paratype. Prep. 497 : Valvae and aedeagus in ventral aspect (the left valva shows its natural breadth, of the right one half is seen from above).  
Fig. 74 : *Rhodobates (Talaeporia) atactopis* Meyr. (Bagdad). Prep. 492.  
Fig. 75 : *Nemotois antilyca* Meyr. (Diana, Irak), paratype. Prep. 511.

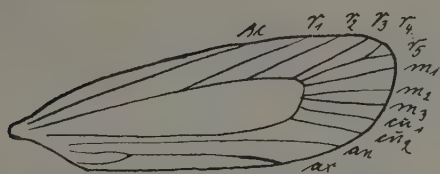
Explanation of Abbreviations    Prep. = Preparation of the genital armature

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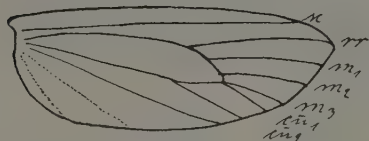


## Explanation of Plate XI

- Fig. 76 : *Wiltshireia alba* Ams. — Venation of fore and hind wing.  
Fig. 77 : *Gelechia bathrosticta* Meyr. — Venation of fore wing.  
Fig. 78 : *Bagdadia irakella* Ams. — Venation of fore wing.  
Fig. 79 : *Bagdadia irakella* Ams. — Venation of hind wing.  
Fig. 80 : *Asbolistis chthoniopa* Meyr. — Venation of fore wing.  
Fig. 81 : *Asbolistis chthoniopa* Meyr. — Venation of hind wing.  
Fig. 82 : Formation of frons in lateral and dorsal view, in : (A) *Tegostoma comparalis* Hb., (B) *Anthophilopsis baphialis* Led., (C) *Aeschremon disparalis* H.-S., (D) *Kerbela monotona* Ams., (E) *Turania pentodontalis* Ersch., (F) *Emprepes pudicalis* Dp., and (G) *Emprepes russulalis* Chr.
-



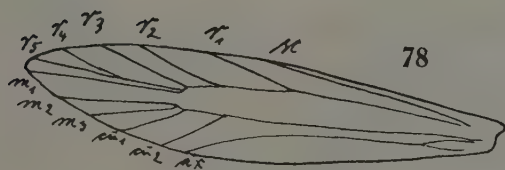
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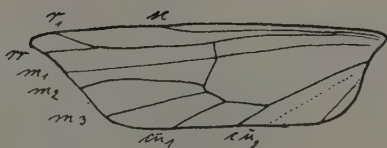
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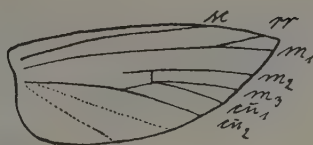
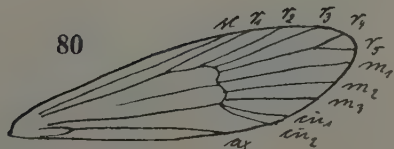
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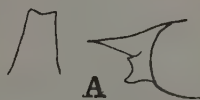
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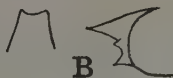
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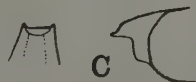
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A



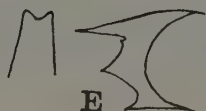
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C



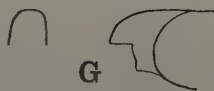
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E



F



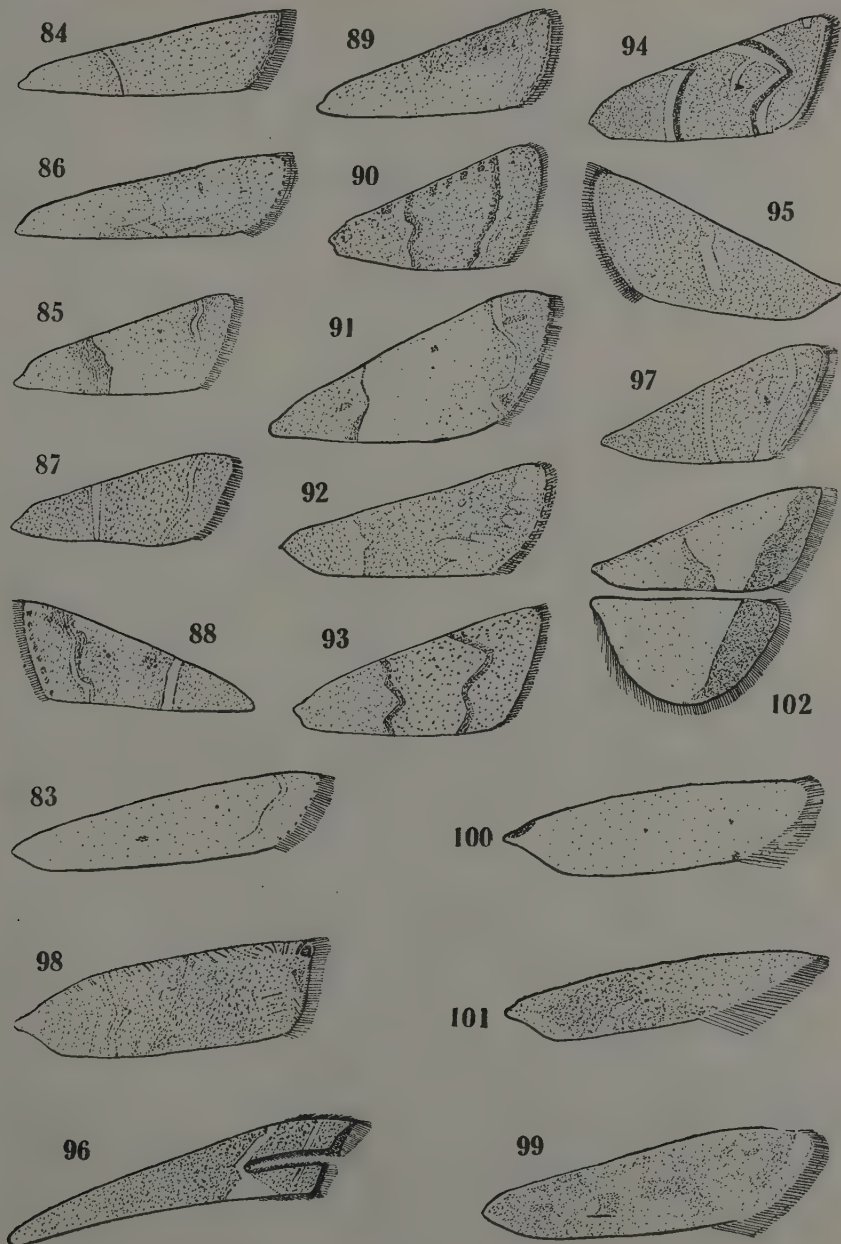
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## Explanation of Plate XII

- Fig. 83 : *Crambus stenopterellus* Ams. — Fore wing.  
 Fig. 84 : *Heterographis concavella* Ams. — Fore wing.  
 Fig. 85 : *Ichorarchis iozona* Mey. — Fore wing.  
 Fig. 86 : *Tephris stenopterella* Ams. — Fore wing.  
 Fig. 87 : *Salebria argyrophanes* Meyr. — Fore wing.  
 Fig. 88 : *Nephopteryx eustatica* Meyr. — Fore wing.  
 Fig. 89 : *Ptyonocera proteroleuca* Meyr. — Fore wing.  
 Fig. 90 : *Bostra minimalis* Ams. — Fore wing.  
 Fig. 91 : *Lepidogma wiltshirei* Ams. — Fore wing.  
 Fig. 92 : *Constantia wiltshirei* Ams. — Fore wing.  
 /a Fig. 93 : *Cybalomia haplogramma* Meyr. — Fore wing.  
 /a Fig. 94 : *Cybalomia triplacogramma* Meyr. — Fore wing.  
 Fig. 95 : *Tegostoma ahwazalis* Ams. — Fore wing.  
 /c Fig. 96 : *Marasmarcha leucogrossa* Meyr. — Fore wing.  
 Fig. 97 : *Krombia pulchella* Ams. — Fore wing.  
 Fig. 98 : *Semasia bagdadiana* Ams. — Fore wing.  
 Fig. 99 : *Bagdadia irakella* Ams. — Fore wing.  
 Fig. 100 : *Symmoca costobscurella* Ams. — Fore wing.  
 Am Fig. 101 : *Scythris bagdadiella* ~~Mes.~~ — Fore wing.  
 Fig. 102 : *Phlyctaenodes platyphaea* Meyr. — Fore and hind wings.
-







# Middle-East Lepidoptera, IX

NEW SPECIES AND FORMS FROM ARABIA AND PERSIA,  
WITH A DESCRIPTION OF THE GENUS *TAMSOILA* FROM IRAQ

(with 19 Text-Figures and 1 Plate)

by E.P. WILTSHIRE, F.R.E.S.

The previous article in this taxonomic series dealt exclusively with Cyprus and appeared in *Ent. Rec.* LX (1948), pp. 79-87. The present paper is the result of an examination of material from Arabia, Iraq, and Iran (Persia). For the Arabian material I am primarily indebted to B.P. Uvarov, C.M.G., who kindly let me see material collected by the Anti-Locust Units under his direction in Arabia. In some cases I have also referred to material previously caught by H. St. J. Philby, E.B. Britton, and H. Scott and already in the British Museum. I have not however had time to examine all their material exhaustively and the following descriptions from Arabia were made originally from specimens taken by Locust Officers in the course of their official activities; the previous material from Arabia is only mentioned in the case of some of the species so taken. Paratypes from North-East Africa of at least one of the new Arabian species also exist in the British Museum where I saw them.

The Persian material, on the other hand, was taken by me personally in 1938-42; the Iraqi moth was similarly taken a few years earlier.

The South-West Arabian and African localities are situated south of the Tropic of Cancer and are marked with an asterisk (\*). Species from localities not so marked can be considered Palaearctic.

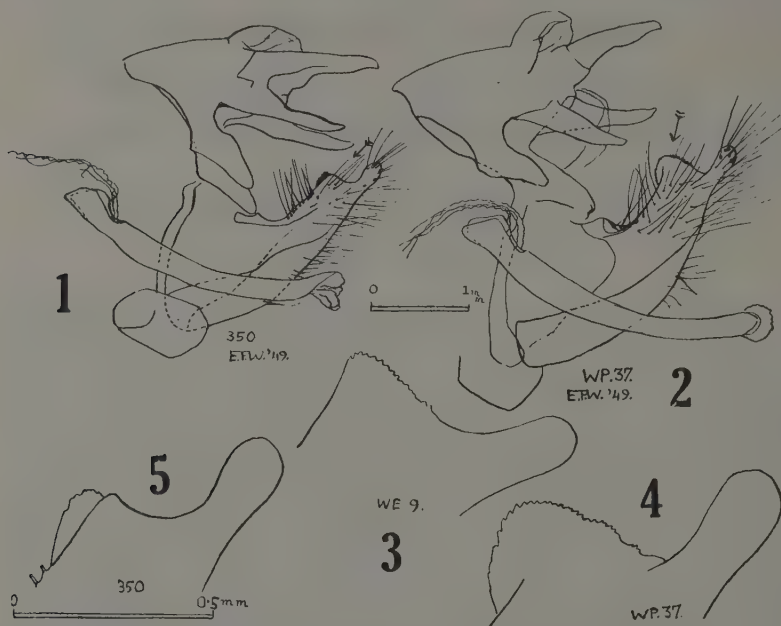
## SATYRIDÆ

### *Eumenis tewfiki* sp.n. (Plate, figs. 1 and 2)

A fine new species close to *pisidice* Klug, rather smaller, and distinguished therefrom by its larger black oval forewing ocelli, narrower male sexual brand, less emarginate hindwing, less white hindwing fringe, more monotonous underside and slightly differently shaped male valve.

Span: ♂♂, 43-47 mm., and ♀♀, 43-50 mm.

The male genitalia (fig. 1) shew less difference than the wing-facies, and show the close relationship to *pisidice* (fig. 2); the valve form of the latter seems to vary, whether individually or geographically I



Figs. 1-5 : ♂ genitalia of *Eumenis pisidice* Klug and *Eumenis tewfikii* sp.n. (figs. 1 and 5, *tewfikii* (South-West Arabia); figs. 2, 3 (Sinai) and 4, (Palestine), *pisidice*); (figs. 1 and 2, lateral view, with left valve removed; figs. 2-5, ditto, enlarged view of costal apex of right valve, viewed from interior, laterally).

am not sure, and I shew much enlarged the difference between the costal apex of a Palestinian (fig. 4) from that of a Sinaian (fig. 3) *pisidice*; but this variation does not include the form found in South-West Arabia (fig. 5).

Holo-Type : ♂, 28.xii.36, leg. H. St. J. Philby, Arif, Arabia (in British Museum) (\*).

Allo-Type ; ♀, 6.x.37, leg. H. Scott and E.B. Britton (British Museum Expedition to South-West Arabia), Jebel Jihaf, western face, c. 6600 ft., W. Aden Protectorate (in British Museum) (\*).

Para-Types : ♂, 27.viii.44, leg. A.R. Waterston (Middle East Anti-Locust Unit), 8000 ft., Abba, Asir Mts., S.W. Arabia (\*) (in coll. m.); ♀, 3.v.36, leg. Mohammed Tawfik Effendi, Gebel Mataran, Yemen (\*) (in coll. Faculty of Science, Fouad I University, Abbasiya, Cairo).

Fifty-two other paratypes ♂♂ and ♀♀ in British Museum, some labelled same as holo-type and allo-type; also, 4 and 5.xii.36 (Philby), Mibrata and Hubait (\*); 10.xii.36 (Philby), Haq; 9-10.vi.36, Suda, Asir Mts. (Philby) (all Asir, Saudi Arabia) (\*); and the following (leg. Scott and Britton): 17.ii.38, c. 9000 ft., Jebel Girwan, Ghaiman, about 9 miles S.E. of Sanaa, Yemen (\*); 8.iii.38, c. 10,000 ft., Jebel Jelal above Nakil Isla, Yemen; 25.x. and 3.xi.37, c. 7000 ft., Jebel Harir, W. Aden Protectorate (\*); also vi.38, c. 10,000 ft., top of Jebel Hada (leg. Dr. P.W. Petrie), Yemen (\*).

### LASIOCAMPIDÆ

#### *Chondrostega brunneicornis* Wils. (bona spec.)

I described this form on p. 97 of *Ent. Rec.* LVI, October 15th, 1944, as a subspecies of *subfasciata*, possibly specifically distinct, inhabiting Kuwait, Eastern Arabia. Having now examined structurally Egyptian speci-

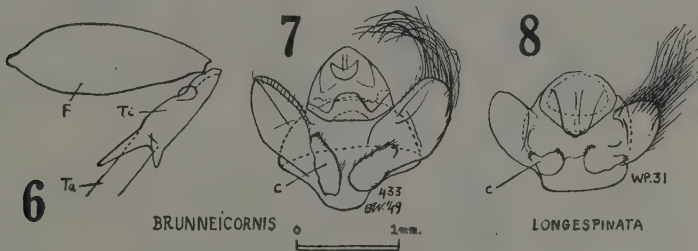


Fig. 6 : *Chondrostega brunneicornis* Wils., bona species, upper part of foreleg (F = femur, Ti = tibia, Ta = tarsus).

Figs. 7 and 8 : *Chondrostega* ♂ genitalia, open ventral view, with aedeagus omitted : C = clavus of (7) *brunneicornis* Wils. b. sp., (8) of *longespinata* Klug.

mens of *Chondrostega subfasciata* Klug and *longespinata* Auriv., I am able to be more precise : *brunneicornis* is actually, notwithstanding my remarks in 1944, nearer to *longespinata* than *subfasciata*, although the tibial spine is shorter than the tibia itself. I have now also examined the genitalia of all three forms and consider them all three specifically distinct. *C. brunneicornis* differs in the male genitalia from *longespinata* Klug for in the latter the clavus is papillate, in *brunneicornis* regularly oval (see figs. 7 and 8). The tibial spines are also more divergent and the second one more developed in *brunneicornis* (cf. fig. 6 with fig. 5 (p. 226) in Part I of my list of Lepidoptera of Egypt, this Bulletin XXXII, 1948), and the whole tibia is different in shape.



## AGROTIDÆ (PHALAENIDÆ)

*Cucullia tropicarabica* sp.n. (Plate, fig. 3)

This new *Cucullia*, the first of the *verbasci*-group to be taken south of the Tropic, is close to *thapsiphaga* structurally and in aspect, though smaller. The forewing is broader, with a peculiar violet-blue suffusion. The male genitalia differ, principally in the greater development of the chitinous thorn on the ventral distal end of the aedeagus (fig. 9).

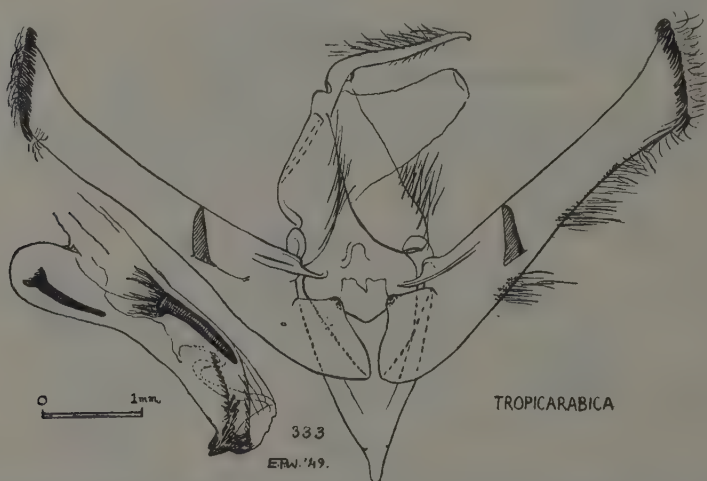


Fig. 9 : *Cucullia tropicarabica* sp.n., ♂ genitalia, ventral open view, with aedeagus separated.

Forewing, slate grey, bluish suffused, whiter on the median area, browner towards the costa and margin; costa blackish. Orbicular and reniform, clearly visible, paler, with darker centres, edged with black spots; the two transverse fasciae are traceable but the postmedian is incomplete. Underside of forewing, grey, without transverse fascia. The hindwing (♂) is pale grey with a darker border; on nervure 2, a heavy diffuse brown spot; nervures, blackish.

Expanse : 40 mm.

Holo-Type : ♂ (leg. A.R. Waterston), 29.i.48, Wadi Yemaniya, Tropical Hejaz, Saudi Arabia (\*). (Presented to the British Museum by the Middle East Anti-Locust Unit).

***Cucullia macewani* sp.n. (Plate, fig. 4)**

Like *anceps* Stgr. <sup>(1)</sup>, but more variable. According to Boursin, who has examined three paratypes and their genitalia, distinct from that species, and belonging rather to the *barthae-caninae* sub-group of the *Cucullia verbasci* group. Some specimens are very white, with pale hindwings (f. *albidior* nov.) (Plate, fig. 5) but the holo- and allo-types of *macewani* have the forewing suffused with pale slate-grey basad and in the half nearest the hindmargin, but ochreous in the cell and towards the apex. Cross-lines, shaped as in *barthae* Boursin but clearer; more zigzag and less clear than in *faucicola* Wilts. No median shade as in *faucicola*. Hindwing ♂,

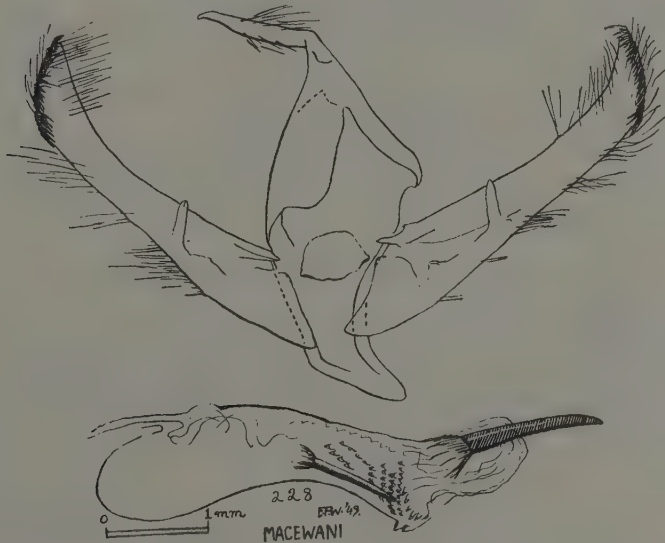


Fig. 10 : *Cucullia macewani* sp.n., ♂ genitalia, ventral open view with aedeagus separated.

whitish grey with darker nervures (including the discoidal) and submarginal band; the latter does not reach the anal angle. Termen, very dark, wavy as in *barthae*. In the whiter specimens (*albidior*) the submarginal band is narrower.

Underside, without cross-fasciae; costæ, whitish, nervures white at termen, often brown beyond the cell. In the *albidior* forms the whole under-

(1) My previous record of *anceps* from Hail, on p. 242, *Bull. Soc. Fouad I Ent.*, XXXII, 1948, must be corrected, the specimens being the same as the types of *macewani* (E.P.E.).

side is whitish, except for the brown suffusion of the nervures and the termen.

Span : 38-39 mm.

The male genitalia, like the imago, vary somewhat, and those of the holo-type are shewn (see fig. 10). Boursin does not reject the possibility of *albidior* being distinct, and says the species should be bred to decide this. This however is impracticable, so the question must be left open. Personally I incline to regard the two forms as belonging to one species. Boursin points out, that if all one species, it is more variable than any other species in the *verbasci* group, even than *caninae*.

Holo-Type : ♂ (Prep. 228, see fig. 10), 23.ii.46, Sayarat, North Dahana, 44.50 E., 27.10 N., Saudi Arabia, in coll. m.

Allo-Type : ♀, 22.ii.46, Dahana, 26.25 N., 44.80 E., Saudi Arabia in British Museum.

Para-Types : 2 ♂♂ and 2 ♀♀, same data as Holo-Type, in coll. m., coll. Boursin, and British Museum.

Named after I. McEwan Esq., one of the members of the Middle-East Anti-Locust Unit which visited Nejd in spring 1946 and brought back this and many other moths of great interest.

#### ***Catamecia minima arabica* subsp.n. (2)**

Thorax and forewing, darker than any named form of this species (= *jordana* Stgr.). The whole forewing is suffused with sooty brown, against which, in some individuals, only the reniform stigma stands out whitish, in others also the orbicular stigma, and some marginal markings. All other markings obscured, except the claviform stigma, which is black and usually elongated.

Holo-Type and Para-Type : 3 ♀♀, 28 and 29.iii.48 (leg. B.P. Uvarov, C.M.G. and A.R. Waterston), Shaq Yamaniya, Tahama (i.e. coastal plain) of Asir, Saudi Arabia (\*). (In coll. m. and British Museum).

In parts of eastern Arabia and southern Iraq the species becomes paler and indistinguishable from typical *jordana* Stgr., e.g. specimens in coll. m., 1.v.43, Kuwait, and 6.iii.44, Basra. In the British Museum, leg. Philby, there is a darker, transitional form from Jiban, Arbak, Eastern Arabia, which is indeed slightly darker than the Algerian form, of which the British Museum has a long series, and may be about as dark as *mauretanica* Stgr.,

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(2) Since writing this description I have ascertained that the name *jordana* Stgr. must sink to *minima* Swinhoe as the specific name. See my "Lepidoptera of the Kingdom of Egypt, Part II, (2nd Addendum)", later in this Bulletin (E.P.W.).

if this form is darker than the Algerian. Many of the Algerian specimens are as pale as the average Palestinian specimen. It would appear therefore that this little moth varies rather according to terrain than geographical regions. In parts of Arabia typical *minima* forms have been taken. The darkest form of all may be called *arabica* because not known from elsewhere although evidently not found everywhere in Arabia.

(Note : There is a series of *Catamecia deceptrix* Stgr. in the British Museum, leg. Philby, Khufaiiya, 13.xi.34, and Arma (Dahna), 28.xi.31; Arabia).

**Parallelia ( = Ophiusa ) uvarovi sp.n. (Plate, fig. 6)**

Nearest to the two African species, *portia* Fawc., and *rectifascia* Fawc. *P. portia* differs in having an orange suffusion outside the postmedian fascia which is bidentate on the cell; *rectifascia* differs less, but is less white, and has the inward bend, of the postmedian fascia, inward-pointed below the cell, while in *uvarovi* it forms a round bay here.

Antenna ♂, pubescent. Tongue, present. Palp, head and thorax, with brown, white and grey scales and hairs. Forewing, deep blackish brown, warmer brown basad, with grey-white median stripe and submarginal field. The median stripe is sharply edged proximally, diffuse distally. Postmedian line, wavy, white, at right angles to costa and nearly straight as far as nervure 3, there bent inwards parallel to costa, bent out again below nervure 1, with a light rufous distal shade except near costa. Submarginal line, pale, enclosing near costa a black triangular apical spot, obsolescent thereafter, and clearer again near tornus; represented by a black cloud on nervure 6, by a smaller black shade, parallel to the termen, at nervure 3, and a small black shade on the inner margin. Termen, wavy, finely dotted with black on the nervures. Fringes concolorous.

Hindwing, blackish brown, with a pale straight but diffuse median band. Termen, wavy, black; fringes, whitish. Underside, both wings, grey freckled with brown, darker submarginally with pale nervures; postmedian line indicated.

Span : 30 mm.

Holo-Type : ♂ (leg. A.R. Waterston), 1.ii.48, Madraqa, Tropical Hejaz, Saudi Arabia (\*) presented by Middle-East Anti-Locust Unit to British Museum).

Para-Types : ♂ (leg. A.R. Waterston), 29.i.48, Wadi Yamaniya, Tropical Hejaz, Saudi Arabia (\*), in coll. m.; 3 (already in British Museum), leg. M. Portal, Hyatt, 3.iv.29, 2200 ft., Somaliland, 10 N., 44.30 E. (\*).

***Anydrophila fouadi grisea* subsp.n.**

The typical race of this moth from Sinai was described in *Bull. Soc. Fouad I. Ent.*, XXNI, 1947 (Cairo).

The new race differs by its much darker, almost blue, grey forewing colour. The black subapical shade alone stands out even darker than the rest of the forewing, whose other markings are discernible on closer inspection. This form may be peculiar to less sandy or better watered desert localities.

Holo-Type and Para-Type: 2 ♀♀, 22.iv.38, and 24.iv.38, Ahwaz, S.-W. Iran (in coll. m.).

Para-Type: 1 ♀, 24.iv.44, Hail, Jebel Shammar, Arabia (leg. A.R. Waterston). This example has been presented by the Middle East Anti-Locust Unit to the British Museum.

In the British Museum there is also an example of the species from another part of Arabia: Qaamiyat, Rub' al Khali (leg. H. St. J. Philby, 23.ii.32); but this is a well-marked form of the typical race with a paler ground-colour.

***Armada waterstoni* sp.n. (Plate, figs 7 and 8)**

This new species comes between *tenera* Brandt and *eremophila* Rebel.

Frons, with crown-shaped prominence, the tips being more triangular and outwardly directed than in *eremophila* and *plumbizonata* Hamps.; the central most forward part, a more projecting plate.

Antenna, ♂, ciliate to tip; ♀, pubescent basad.

Head, thorax and forewing, a warm brownish grey. Antemedian and postmedian fasciae, black, the former more outward-waved on nervure 1

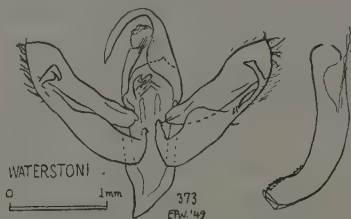


Fig. 11 : *Armada waterstoni* sp.n., ♂ genitalia, ventral open view with aedeagus separated.

than *eremophila* and *tenera*. Central shade, diffuse, leaden, not very heavy, close to reniform stigma and postmedian fascia. The latter is as in *eremophila*, or lighter than the darkest examples thereof. Orbicular stigma, small, of ground colour with dark centre, oval or round; reniform, pale, and costal patch, as in *eremophila*. Hindwing, whiter, without cell-spot, the nervures brownish terminad of cell; a dark grey diffuse shade fills the outer half



between nervures 2 and 6 and also inside nervure 1 near the anal margin; i.e. more marked than *eremophila* and *plumbizonata* but less completely banded than *tenera*. Termen, a pale faint line, not darker from nervures 3 to 5 as in *eremophila*; fringes, white.

Underside, forewing whitish with dark cell-spot and submarginal band and apex; hindwing whitish, marked more or less as upperside.

Male genitalia (see fig. 11) : aedeagus lacking the distal interior band of teeth present in *eremophila* and *plumbizonata*; distal ventral surface of aedeagus, much less scobinated. Furthermore, the harpes seem slightly asymmetrical, that on the left valve being thicker and larger, which is not the case in the other two species examined (the male genitalia of *eremophila* Rebel have also been examined; they seem identical with those of *plumbizonata*).

Span : 22-25 mm.

Holo-Type : ♂, 19.i.48 (leg. A.R. Waterston), Buraiman camp, coastal plain near Jedda, Arabia (\*) (in coll. m.).

Para-Type : ♀, 1.ii.48, Madraga, Tropical Hejaz (leg. A.R. Waterston), Arabia (\*) (in coll. m.).

Para-Type : ♀, same place and captor as Holo-Type; presented by Middle East Anti-Locust Unit to British Museum.

Other Para-Types : 11 examples, leg. H. St. J. Philby, at the following Arabian (\*) localities (all in British Museum) : 29.i.35, Bir Ibn Hassani; 6.iii.35, Marrat; 26.xii.34, Jedda; 6.ii.35, Shaib Sudair; 19.ii.35, Shaib Atj.

***Proconis arabica* sp.n. (Plate, fig. 9)**

Close to *P. abrostaloides* Hamps. (S. Africa), differing by the straighter submarginal line, greyer forewing, and whiter hindwing; an intermediate

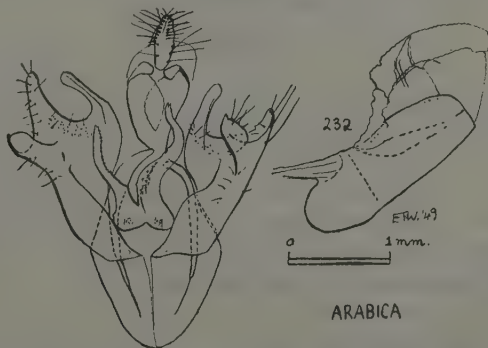


Fig. 12 : *Proconis arabica* sp.n., ♂ genitalia, ventral open view with aedeagus separated

form, probably distinct, inhabits Somaliland, and has apparently not been named yet; but I leave this aside at present.

Forewing, ochreous, heavily powdered with black and grey; antemedian line, black, inward-angled below the cell. A black basal streak extends just across this fascia. Median line, black, outward-angled below the cell, but curved inward just inside the reniform stigma which is pale grey, black-outlined, sub-oval. Other stigmata, absent. Submarginal line, paler, rather indistinct, oblique at costa, inward-angled at about nervure 8, rather straight thereafter. Termen, wavy, fine, black. Fringes, grey and brown chequered.

Hindwing, almost pure white; its termen, light brown; fringes, whitish,

Male genitalia, see fig. 12.

Holo-Type: ♂, 30.i.48 (leg. A.R. Waterston), Ashaira, Tropical Hejaz, Saudi Arabia (\*). Presented by Middle-East Anti-Locust Unit to British Museum.

#### **Tamsola gen. nov.**

Following is the diagnosis of this Hypenine genus, the name being hitherto a generic nomen nudum. A summary description and good photograph of the species appeared in *Ent. Rec.* LVIII.



Fig. 13 : *Tamsola tarda* Wilts., ♂ genitalia, lateral view, with aedeagus separated and viewed vertically, and left valva removed (U = uncus, A = anus, V = right valva).

Palp, with 2nd and 3rd segments unusually long, each twice as long as diameter of eye, and about equal to each other, upcurved and back-curved in sickle-form, reaching over the head.

Frons, smooth, slightly bulging.

♂ antenna, with long fine cilia.

Head and thorax, clothed with adpressed often elongated scales.

Fore-tibia, with normal epiphysis; mid-tibia, with two pairs of spurs; hind-tibia, with one terminal spur. Tarsi, long.

Neuration : forewing, without areole; nervures 3, 4 and 5 from the cell close together; 6 missing, 7 and 8 from the cell close together; 9 and 10, stalked, 9 being apical. Hindwing, nervures 4 and 5, connate; discocellular, faint, in-curved between 5 and 6; 6 and 7, connate; 8 from the cell near the base.

Male genitalia (see fig. 13) : uncus, formed like a distended pelican's beak; valve, longer than broad; transtilla, thick proximally and extending distally parallel to chitinated costa before ending near valve-apex; apex obtuse, less prominent than ventral corner which is armed with tufts of setae; sacculus weak. Aedeagus, short, with longer lateral appendages, asymmetrically developed.

Geno-Type, *tarda* m., 1946, *Ent. Rec.* LVIII, p. 31, Pl. VII, fig. H. (Iraqi Kurdistan).

#### GEOMETRIDÆ

##### ***Hemidromodes robusta triforma* subsp.n. (Plate, figs. 10 and 11)**

The South-West Arabian form of this little known Emerald, described by Prout from Eremic North Africa, has three very different forms, which look like at least two distinct species, but whose specific identity can be ascertained by the genitalia. The species appears in a greenish or a red-brown form; and one or perhaps even both of these two colour-forms can be strongly marked or unmarked; so far I have only seen unmarked specimens of the green form, and these are like typical *robusta*, but if the red form can also be unmarked, the race will have four forms. Before describing it in detail, I might mention that *Hemidromodes affinis* Roths. (also an Eremic North African Emerald moth) has an undescribed red-brown form as well as the typical green form; but in this case, as far as I can judge from the scanty material, the two forms do not fly together, i.e. the new red form is a new race; it is described in Part II of my « Lepidoptera of the Kingdom of Egypt », where I also give drawings of the genitalia of the two species *affinis* and *robusta* (this Bulletin, pages 401-402).

Forewing of *triforma*, whitish buff, heavily sprinkled with purplish-rufous, or pale olive-green scales. Ante-median and post-median fasciae usually clearly marked but absent in some green forms. The former fascia is bent outwards twice, the latter is bent on the cell and then runs more or less parallel to the outer margin, until it is bent inwards on nervure 2 just opposite the second outward bend of the antemedian fascia; the rather darker median area is thus constricted on that nervure. The postmedian fascia is outward bent again on nervure 1. The fasciae are darkest at the costa and inner margin; the postmedian fascia has a white distal edging

and is sometimes darker on the nervures. Fringes pale concolorous. Span :  $\sigma\sigma$ , 16-19 mm.,  $\varphi\varphi$ , 24 mm. The green unmarked form is easily confused with *Microloxia herbaria* Hubn., its companion in South-West Arabia, if attention is not paid to structure.

Holo-Type : a red-brown  $\sigma$ ; 30.i.48 (leg. A.R. Waterston), Ashaira, Tropical Hejaz, Saudi Arabia (\*).

Allo-Type : a similar  $\varphi$ ; same data.

Para-Types : same data, or 29.i.48, Wadi Yamaniya, Tropical Hejaz, Saudi Arabia (\*). Types in British Museum and coll. m.

***Rhodostrophia peripheres debilis* subsp. n. (Plate, fig. 14)**

In aspect resembles a weakly-marked *cuprinaria* Christ. (Plate, fig. 13), but paler; the male genitalia however show it to be structurally closer to

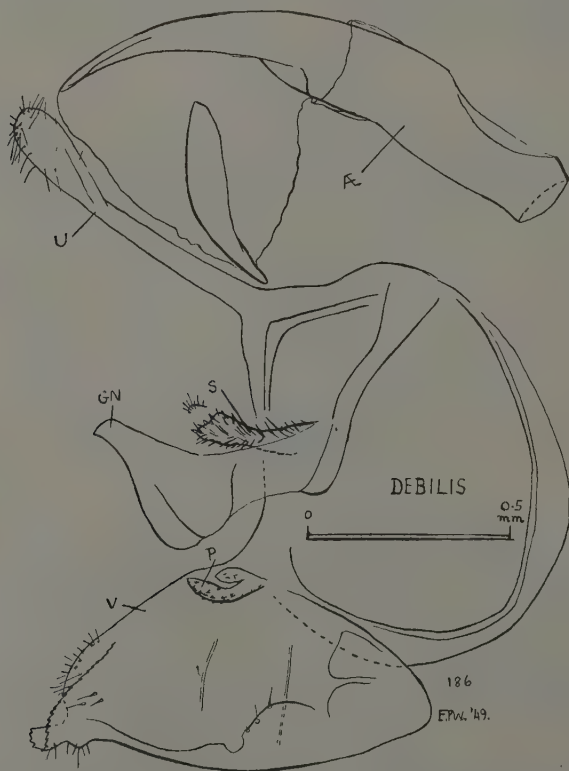


Fig. 14 : *Rhodostrophia peripheres debilis* subsp. n.,  $\sigma$  genitalia, ventral open view with right valve removed and aedeagus (AE) separated.

*peripheres* Prout (Plate, fig. 12) (bona species !). It is impossible to mistake *debilis* for *peripheres* on account of the latter's clearer markings and more rusty coloration. Large females of the first brood of *debilis* can however be confused with *nesam*, with which it flies.

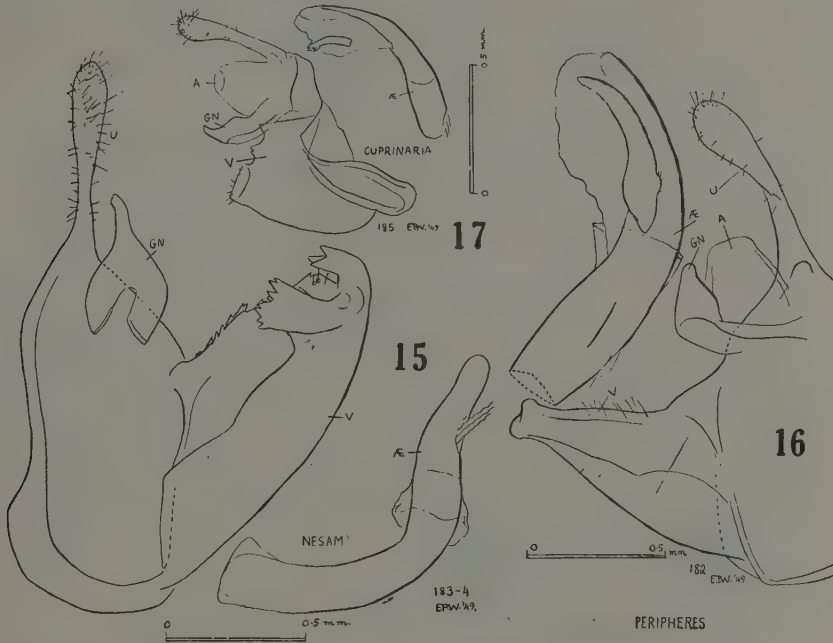


Fig. 15 : *Rhodostrophia nesam* Brandt, ventral open view, with left valve removed and aedeagus (AE) separated. — Fig. 16. : *Rhodostrophia peripheres* Prout (bona species!), ventral open view, with right valve omitted, and aedeagus (AE) separated. — Fig. 17 : *Rhodostrophia cuprinaria* Christ., lateral view with right valve removed, and aedeagus (AE) separated. (U = uncus, S = subscaphium, GN = gnathos, V = left valve, P = upper valve-hinge process).

Forewing and hindwing upperside, dull yellowish flushed with pink (not purplish as in *cuprinaria*); this suffusion however is absent from the median area of some examples, including the holotype ♂. Underside, pale, monotonous; marginal shade, weak. Cell-spot, faint on forewing upperside, obsolete on hindwing upperside, obsolete on both undersides. Span : ♂, 26 mm.; ♀, 30 mm. Second brood : 24-25 mm. Male genitalia : see figure 14 (Prep. 186) where the differences between *debilis* and the others of the *cuprinaria-nesam* group are shown (see figs. 15, 16 and 17).

Holo-Type : ♂, 30.v.40, Sineh Sefid, 6000 ft., Fars, S.W. Iran (in coll. m.).



Allo-Type : ♀, ditto.

Para-Types : ♀♀, 20.ix.40, Khan-i-Zinian, 6000 ft. (adjacent to Sineh-Sefid), Fars, S.W. Iran (in coll. m.).

Fig. 16 shows the genitalia of the specimen of *peripheres* Prout from the Yezd mountains; in wing-markings this form (Plate, fig. 12) is very like typical *peripheres* from the Elburz Mounts, but the valve-tip is not serrate, the uncus is shorter, and the scobinate process in the upper valve-hinges is lacking.

Fig. 14 shows the genitalia of *debilis* subsp. nov. from Fars, and these parts are much more similar to those of typical *peripheres* despite the dissimilarity of wing-marking (Plate, fig. 14). In both, the valve-tip is minutely serrate. However, the spinose subscaphium was not present in the type of *peripheres*, whose valves also were somewhat more pointed. It is not yet clear whether these differences of genitalia are local or individual, and at present I prefer to treat *debilis* as a race of *peripheres* and I also prefer not to give a distinctive name to the Yezd form, so similar to the typical superficially. Similar but slightly darker forms of *peripheres* occur on the Hamadan mountain range, Alvand, but their genitalia have not yet been studied. In none of the above is the valve heavily and extensively serrate as in *nesam* Brandt from Fars (fig. 15), which moreover has a quite differently formed aedeagus. The sub-rectangular valve-tip of *cuprinaria* (fig. 17) is characteristic and distinguishes it from all the above, though its aedeagus shows affinity to *peripheres*.

#### **Glossotrophia buraimana sp.n. (Plate, figs. 15 and 16)**

Very similar to *G. chalcographata* subsp. *sinaica* Rebel 1948, somewhat darker marked, usually smaller, and certainly less variable; differs therefrom, structurally, in having spurless ♂ hind-tibiae, rudimentary cerata, and shorter socii. In *chalcographata sinaica* the ♂ hind-tibia has one spur. In the ♀ of both species it has a terminal pair.

Very closely related to *Glossotrophia alfieri* (a new species which I am describing, on pages 416-418, from the Eastern Desert, Egypt) but with darker markings. *G. alfieri* also has the cerata quite undeveloped, but the form of the eighth sternite differs; in *alfieri* furthermore the ♂ hind tibia has but one spur.

Antenna : ♂, ciliated; ♀, simple.

Upper-side rosy-ochreous powdered and lined with grey-brown; on the forewing the second fascia touches or passes over the black cell-spot and approaches closely to the first on nervure 2 but is outward-angled on nervure 1. The third fascia runs a straighter course but is strongly dentate. Submarginal line, wavy, whitish in a grey field. Termen black, interrupted

at the nervures on the outer margin but continuous round the rounded apex (in *sinaica* the termen is continuous). Fringes, distally paler, basally brownish-chequered. Hindwing similar.

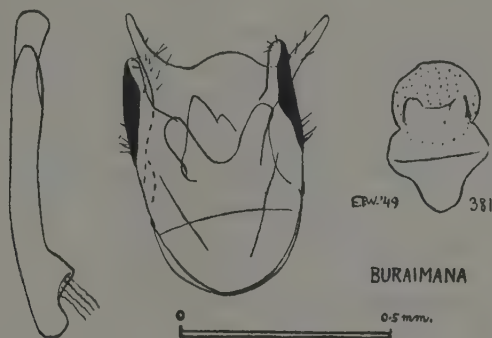


Fig. 18 : *Glossotrophia buraimana* sp.n., ventral view, with aedeagus separated, and eighth sternite also shewn.

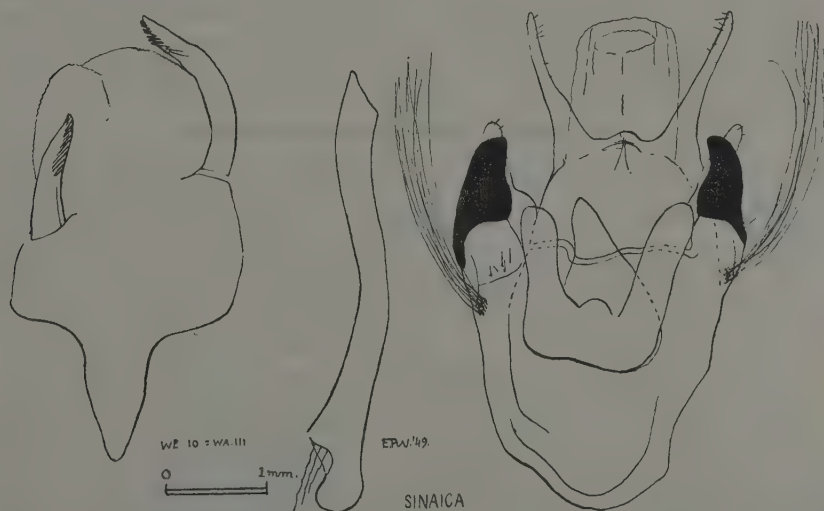


Fig. 19 : *Glossotrophia chalcographata* subsp. *sinaica* Rebel 1948, ventral view with aedeagus separated, and eighth sternite also shewn.

Underside, glossy ochreous-grey, costa paler ochreous at apex. Fringes also paler.

Span : 18-21 mm.

Holo-Type : ♂, 1.ii.48 (leg. A.R. Waterston), Madraqa, Tropical Hejaz, Saudi Arabia (\*), (in coll. m.).

Allo-Type: ♀, same date, place and captor; presented by Middle East Anti-Locust Unit to British Museum.

Para-Types: ♀♀ with same data as above two types, also 4.xii.44, Buraiman (coastal plain near Jedda) (\*) and 30.i.48, Ashaira, 'Tropical Hejaz' (\*) (leg. A.R. Waterston), and 26.ii.48 (leg. G. Popov), Madraqa (\*) (in coll. m. and British Museum). There is also a series of this new species in the British Museum, leg. H. St. J. Philby at Taif, in the Tropical Hejaz mountains behind Jedda; this series was seen by Prout and marked "sp. near *asellaria* but face pale" but never named by him. Caution should be observed with Arabian *Glossotrophia* species from this region, since Philby has sent in, from Taif, to the British Museum no less than three distinct species of the genus: one of these seems to be *chalcographata sinaica* Rebel, fewer of which were taken at Taif than of *buraimana*; and a third larger form which Prout marked "*asellaria* subsp.". Prout even separated a doubtful fourth form from this last series (the larger form), distinguishing it with the note: "face pale". There is also another smaller *Glossotrophia* (Prep. 389) sp.n. from the coastal plain, South-West Arabia, in the Anti-Locust material presented to the British Museum. The naming of all these must be deferred for the present. For a comparison of the genitalia of *chalcographata sinaica* and *buraimana* see figs. 18 and 19.

***Xanthorhoe fuscofasciata subardua* subsp.n.**

Less sandy-coloured than the typical form from the Ardekan mountains, darker brown and grey, well contrasted with whitish-grey, the fasciae clearer.

Holo-Type and Para-Types: (♂♂) in British Museum. Seven ♂♂ Para-Types in coll. m. All these were taken at 9000 ft., 30.vi.38, Mt. Alvand, above Hamadan, Iran (Persia).

***Xanthorhoe fuscofasciata zoroaster* subsp.n.**

Has the sandy coloration of typical *fuscofasciata* Brandt but the markings differ somewhat. The ♂ genitalia do not differ significantly in the three races (*fuscofasciata*, *subardua*, and *zoroaster*). Ante-median area, whitish, ante-median and post-median fasciae less sharply denticulate, post-median fascia whitish. Submarginal field more monotonous than in the typical race, paler grey-brown. Tergites, concolorous. Hindwings, pale brown-grey, darker terminad. Underside, pale, markings obsolete.

Holo-Type: ♂, has been presented to British Museum.

Allo-Type: ♀, and four Para-Types ♂♂, in coll. m. All these were taken at 12,000 ft., 4 and 5.vi.40, Mt. Barfkhaneh, above Yezd, Iran (Persia).

(Note: Though placed in *Xanthorhoe* by Brandt this mountain species (*fuscofasciata*) is very closely related to, though distinct from, *Ortholitha arthuri* Prout (Kashmir). These two species are in fact congeneric, to judge from appearance and male genitalia, but I can, at present, express no opinion on the right generic name).

***Scodionista astragali* spec. nov. (Plate, fig. 17)**

After some hesitation, I bring forward this interesting and deceptive moth in the genus *Scodionista* Joannis, treated by Prout-Seitz IV as a subgenus of *Enconista*, though it fits there (as defined) imperfectly, owing to the lack of frontal development and fore-tibial spine. Its male genitalia however show it a close relative of the Egyptian *Scodionista amoritaria abdulhamidi* subsp. nov., see pages 427-428 of this Bulletin), which has a frontal prominence and a spined fore-tibia. The neurulation agrees, that is, in both species nervures 10 and 11 are free and from the cell. Perhaps it is closely related also to *Enconista autumnata* Brandt, from North Persia, a larger and stronger-marked moth.

The smooth frons and simple tibia at first led me to think it a *Gnophos* but the absence both of the costal spine on the male valve, and of the annulet (ring-formed cell-spot) on the forewing upper-side, and the smoothness of the caterpillar, feeding on a papilionaceous herb (as in *Enconista* and the neighbouring genera) make *Gnophos* less apt than *Enconista* (*Scodionista*); the male genitalia are indeed less different in general form from *Gnophos sacarius* Stgr. than from some *Enconista* (e.g. *erustaria* Stgr.) which have bilobed valves but no furca; there would appear every reason to keep such *Enconista* in a separate genus as Joannis proposed. I cannot however claim to have exhaustively studied all the species involved, and their position may perhaps be clarified by Wehrli in Seitz IV Suppt. of which I have been unable to obtain yet the relevant parts.

The complete disappearance of the cell-spot distinguishes *astragali* from the Egyptian *Scodionista* and from *Gnophos sacarius*. The resemblance of *astragali* to some *Gnopharmia* species must also be mentioned, especially *Gnopharmia sinasafida* Wehrli which inhabits the same district; superficially it can be distinguished therefrom by the more distally placed cell-spot on the forewing underside, preceded by a small costal shade; of other *Gnopharmia* species their black underside marginal band is a superficial criterion. Structurally of course the genus *Gnopharmia* is quite different in having octavals and bilobed valves.

Tongue present; palp, very small; frons, smooth, slightly bulging; head covered with forward-directed ochreous scales; antennae, plumose, but not quite to tip. Fore-tibia with long posterior comb (the usual epiphysis) but without terminal spine.

Forewing of a sandy ochreous appearance, with indistinct greyish markings, including a general greyish freckling, darkest just before the submarginal line. Three greyish costal shades; fasciae, obsolete, but postmedian fascia is indicated by a few dark dots on certain nervures; submarginal line, wavy, pale, only clear near the costa; along the termen, faintly darker spots mark the nervures. Fringes, concolorous. Hindwing, similar but even less marked. Underside, similar, but both wings better marked than upper-side; costal shade of forewing, cell-spots, broad irregularly dentate submarginal fascia and terminal spots, grey, pronounced, though not sharp.

In male genitalia, *astragali* comes closest to the Egyptian *Scodionista* species but differs therefrom most strikingly in the three-times larger aedeagus-cornutus; from *Gnophos sacrarius* Stgr. both differ in lacking the costal spine near the valve-tip, and in not having transtillae joined behind the juxta; *sacrarius* furthermore lacks the spined ridge running up the interior of the valve to its apex in the two *Scodionista*, nor is the valve-tip rounded as in them. The genitalia of these three and also of *Enconista exustaria* Stgr. are illustrated on pages 427 and 428 of this Bulletin, in Part II of my Egyptian list.

The larva of *astragali* is a remarkably pretty caterpillar (Plate, fig. 18). The only known examples of this moth were in fact bred from caterpillars found on *Astragalus fasciculifolius* (det. Kew) on the mountains of Fars, S.W. Iran, 3000-5000 ft. It feeds at night on this foodplant in winter but can be found resting by day on the foodplant head-down in the position shewn in the photo on the Plate. It is pale grey, with a chain of whitish-grey dorsal diamonds except on somites 11 and 12. On somites 9-10, the two posterior sides of each diamond are edged by converging black lines which do not actually meet. The somital joints of the abdominal somites are marked dorsally with a purple bar separating the diamonds from each other. Spiracles, white, black-rimmed. The wavy ochreous spiracular line has a widely interrupted fine black edging. Ventral line, white, with a fine darker centre and with heavy black dashes on each side on each somite. On somite 10, two small dorsal warts. Head, rather flattened. Body, smooth, cylindrical. Feet and claspers, pale grey.

Larvae found at 5000 ft. near Shiraz in winter, began burying for pupation on 1.i.41; the first imago to hatch from these was on 26.ix.41. The phenology is therefore univoltine autumnal. Less advanced larvae were found at Shapur at 3000 ft. in January, also feeding at night on the same plant.

Holo-Type and Para-Type: ♂♂, in coll. m., hatched 26 and 27.ix.41, Fars, South-Western Iran (Persia).



## COSSIDÆ

***Cossus tahamae* sp.n. (Plate, fig. 19)**

Palp, whitish grey with scales.

Antenna of ♂, whitish with strong black pectinations to tip.

Head, with a pale ochreous tuft of scales and hairs. Thorax and feet, dark grey, the tarsi, black-banded.

Forewing, pale silvery grey, paler distally, with black transverse markings giving the wing the appearance of being vibrated; a clear almost straight black ante-median line is slightly bent on the radial and meets both costal and hind margins at right angles; from the hind margin a proximal black line joins the ante-median at the cell. Post-median line, black, similarly bent on the radial nervure, more broken about the anal nervures; basad of this line, the costa is blacker. Submarginal line, finer, dotted, less straight than the others. Termen, indicated by some black scales. Fringes, pale grey.

Hind-wing, whitish. Forewing span : 15-24 mm.

Holo-Type : ♂ (leg. A.R. Waterston), 2.ii.48, Buraiman, coastal plain (Ar.: Tahama), near Jedda, Saudi Arabia (\*). This example has been presented by the Middle East Anti-Locust Unit to the British Museum.

Para-Type : A smaller ♂, same place, date, and captor; in coll. m.

## PSYCHIDÆ

***Acanthopsyche (Dasaratha) arabica* sp.n. (Plate, fig. 20)**

Neuration and feet agree with diagnosis of *Dasaratha* Moore as given in Seitz XIV. I assume however that "spur" is there mistranslated "spine". The spur of *arabica* is similar to what Rebel called "Sporn" (and illustrated in his plates, e.g. *Auchmophila kordofensis* Rebel); it is nothing like a tibial spine as in the *Agrotinae*.

Thorax and abdomen, with long silky grey hairs. Abdomen slender, longer than hindwings.

Forewing semi-transparent grey, with brownish hairs, more opaque terminad. Costa, brownish-black. Termen, darker grey, fringes paler. Hind-wing, similar; costa broadly smoky.

Span : 22 mm.

Holo-Type : ♂ (leg. A.R. Waterston), 12.xii.44, Buraiman, Coastal plain near Jedda, Saudi Arabia (\*) (presented to British Museum by Middle-East Anti-Locust Unit).

## EXPLANATION OF PLATE

Fig. 1 : *Eumenis tewfikii* sp.n., ♂ (South-west Arabia). — Fig. 2 : *Eumenis tewfikii* sp.n., ♀ (South-west Arabia). — Fig. 3 : *Cucullia tropicarabica* sp.n., ♂ (South-west Arabia). — Fig. 4 : *Cucullia macewani* sp.n., ♂ (North-Central Arabia). — Fig. 5 : *Cucullia macewani* f. *albidior* nov., ♂ (North-Central Arabia). — Fig. 6 : *Parallelia uvarovi* sp.n. (South-west Arabia). — Fig. 7 : *Armada waterstoni* sp.n., ♂ (South-west Arabia). — Fig. 8 : *Armada waterstoni* sp.n., ♀ (South-west Arabia). — Fig. 9 : *Proconis arabica* sp.n., ♂ (South-west Arabia). — Fig. 10 : *Hemidromodes robusta triforma* subsp.n., ♂ (South-west Arabia). — Fig. 11 : *Hemidromodes robusta triforma* subsp.n., ♀ (South-west Arabia). — Fig. 12 : *Rhodostrophia peripheres* Prout, bona species, ♂ (Persia). — Fig. 13 : *Rhodostrophia cuprinaria* Christ., ♀ (gen. I) (Persia). — Fig. 14 : *Rhodostrophia peripheres debilis* subsp.n., ♀ (gen. I.) (Persia). — Fig. 15 : *Glossotrophia buraimana* sp.n., ♂ (South-west Arabia). — Fig. 16 : *Glossotrophia buraimana* sp.n., ♀ (South-west Arabia). — ♂ Fig. 17 : *Scodionista astragali* sp.n., ♂ (Persia). — Fig. 18 : *Scodionista astragali* sp.n., larva on foodplant (Persia). — Fig. 19 : *Cossus tahamae* sp.n., ♂ (South-west Arabia). — Fig. 20 : *Acanthopsyche* (*Dasaratha*) *arabica* sp.n., ♂ (South-west Arabia).

All figures except No. 18 are shewn at about natural size or a little less; they are not uniform in scale. In most cases a millimetre-scale is photographed with the insect. Fig. 18 is enlarged (about  $\times 1\frac{1}{2}$ ).

*Middle-East Lepidoptera, IX*

E. P. Wiltshire

Plate



2



3



4



5



6



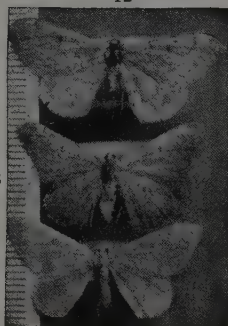
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11



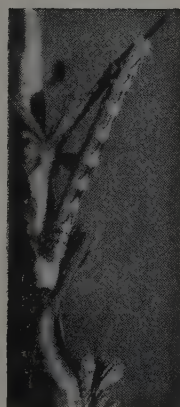
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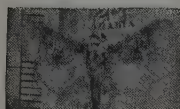
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17



18



19



20



RESULTS OF THE ARMSTRONG COLLEGE EXPEDITION  
TO SIWA OASIS (LIBYAN DESERT), 1395,  
UNDER THE LEADERSHIP OF PROF. J. OMER-COOPER

## Lepidoptera Rhopalocera

by A.G. GABRIEL, and the late A. STEVEN-CORBET,  
British Museum (Natural History)

Of the 162 Butterflies collected by the expedition, no less than 112 belong to the family *Lycaenidae*, the remaining fifty specimens representing five families — *Danaidae*, *Satyridae*, *Nymphalidae*, *Pieridae* and *Papilionidae*. Altogether eleven species were obtained, only the *Lycaenidae* being represented by more than one species.

The appearance of a single female of *Papilio machaon* Linn., is somewhat surprising as is the capture of several specimens of *Zizina otis* Fabr.

### ***Danaus chrysippus f. aegyptius* Schreber**

*Papilio aegyptius* Schreber, 1759, *Nov. Spec. Ins.* : 9, ff. 11, 12 (Damietta, Egypt).

Localities : Siwa, 14.v.1935 (1 ♀), 30.vi.35 (1 ♀), and 14.vi.35 (3 ♂♂); Sitra, 14.vi.35 (3 ♀♀); Maragi, 24.vi.35 (1 ♂); Koreisheid, 20.vi.35 (2 ♂♂, 1 ♀); Baharein, 10.vi.35 (2 ♂♂), and 13.vi.35 (1 ♂, 1 ♀).

Distribution : *Danaus chrysippus* is found in the Canary Islands, St. Helena, Cyprus, Greece, Turkey, Asia Minor, Arabia, Syria, Trans-jordan, Persia, Palestine, Egypt, Algeria, Mauritania, Somaliland, Sudan, Abyssinia and throughout Africa to the South; India, Ceylon, Burma, Malaya, China, Japan, East Indies to Australia.

The nine males and seven females exhibit considerable variation in size, the smallest having an expanse of wings of 66 mm. and the largest 82 mm.

The wings, particularly the hindwings, vary considerably in the intensity of the brown coloration, and the forewing subapical band of white spots form a continuous band in most specimens, one however, has this band broken into small spots.



Typical *chrysippus* differs from the form *aegyptius* in having the white spots of the subapical band considerably larger.

The larvae feed on plants of the *Apocynaceae* and *Asclepiadaceae* families.

***Vanessa cardui* Linn.**

*Papilio cardui* Linn., 1761, *Faun. Suec.*: 276.

*Vanessa cardui* Linn. (C.B. Williams), 1930, *Migration of Butterflies*: 168-212.

Localities: Siwa, 18.iv.35 (1 ♀), 29.iv.35 (1 ♀), 12.v.35 (3 ♀ ♀), 1.vi.35 (1 ♂), 18.vi.35 (1 ♂), 29.vi.35 (1 ♂), and 3.vii.35 (1 ♀).

Total 3 ♂♂ and 6 ♀♀ collected by J. Omer-Cooper who found the butterfly very common in the desert near Khamerea.

Distribution: Europe, Asia, Africa, North and Central America (including the West Indies).

In Western Australia it is represented by the race *kershawi* McKoy.

One of the commonest butterflies and a well known migrant. It has been reported many times flying in great swarms and has been seen flying near ships several hundred miles from land. It appears not to like excessive heat as it is usually found at higher altitudes in hot countries. The usual food-plant of the larvae is the thistle.

***Pontia glauconome glauconome* Klug**

*Pontia glauconome* Klug, 1829, *Symb. Phys.*, text, pl. 7, ff. 18, 19 (Arabian Desert).

Localities: Sitra, 14.vi.35 (1 ♀), and Maragi, 26.viii.35 (1 ♂).

Distribution: Arabia, Sahara, Egypt, Somaliland, Sudan and Kenya.

Single specimens of this local and rather uncommon species have been captured at intervals in Egypt, mainly in desert areas where it is sometimes found flying with its near ally *Pontia daphidice* L.

***Golias electo croceus* Fourcroy**

*Papilio croceus* Fourcroy, 1785, *Ent.*, Paris, 2: 256.

*Papilio helice* Hübner, 1800, *Europ. Schm.*, 1: ff. 440, 441.

Localities: Siwa, 24.iv.35 (1 ♂), 1.v.35 (1 ♀), 22.v.35 (1 ♀), 22.v.35 (1 ♀), and 22.vi.35 (4 ♀♀).

♀ form *helice* Hubn.: Siwa, 29.iv.35 (2 ♀♀), and 22.vi.35 (1 ♀).

One female is unusual in having a complete row of five submarginal spots on the upperside of the forewing. Of several hundred females examined from various localities, all have three or sometimes four spots.

Three females of the white form *helice* Hubn. were obtained.

Distribution: Europe (except extreme North, West Asia, North Africa, Canary Islands, Madeira and Persia

The larvae feed on *Leguminosae*.

**Euchloe charlonia charlonia Donzel**

*Anthocharis charlonia* Donzel, 1842, *An. Soc. Ent. France*, xi : 197, pl. 8, f. 1 (Barbary).

Locality : Siwa, 18.iv.35 (1 ♂).

Distribution : Canary Islands and North Africa.

**Papilio machaon Linn.**

*Papilio machaon* Linnaeus, 1758, *Syst. Ent.*, Ed. V : 462.

*Papilio machaon* Linn. (C.B. Williams), 1930, *Migration of Butterflies* : 43.

*Papilio machaon saharae* Oberthur, 1879, *Et. Ent.*, 4 : 68.

Locality : Siwa 3.vii.35 (1 ♀), (J. Omer-Cooper).

Distribution : Europe, Asia, Morocco, Algeria, Tunisia, Arabia, Persia and Mesopotamia.

The appearance of *Papilio machaon* at Siwa is rather surprising.

It is known to breed along the coastal area of North-West Egypt and it occurs in Morocco, Algeria, Tunisia and the Sahara where a rather small form known as *saharae* Oberth. has been found.

The single female taken at Siwa agrees well with this race and its rather worn appearance suggests that it may have flown or been blown to the place where it was captured.

**Geneges nostradamus nostradamus Fabr.**

*Hesperio urbicola nostradamus* Fabricius, 1793 : 328 (Barbaria).

Localities : Siwa, 24.v.35 (1 ♂), 24.vi.35 (1 ♀), and 19.vii.35 (1 ♂), Sitra, 16.vi.35 (2 ♂♂, 1 ♀), and 14.vi.35 (1 ♀); Baharein, 11.vi.35 (1 ♂); Koreishid, 30.vi.35 (1 ♀); and Zeitoun (Siwa Depression), 17.v.35 (♀).

Distribution : South Spain, Greece, Macedonia, North-East and North-West Africa, Aden, Arabia, Mesopotamia, and Syria to Turkestan.

**Family LYCAENIDAE**

(by the late A. STEVEN-CORBET)

The 112 specimens (73 ♂♂ and 39 ♀♀) of Lycaenidae obtained at Siwa represent five species, of which four are widely distributed in Northern Africa and extend to the equatorial belt. The presence of the fifth species, *Zizina otis*, is remarkable and was quite unexpected for it had not been found previously north of the desert belt in Africa. This species calls for special comment also in that the male genitalia of the Siwa representative agree with the Oriental and not with the African form and it is difficult to decide whether this butterfly is a recent arrival in Northern Africa or whether it represents an archaic survival.

The larvae of all the species of Lycaenidae found at Siwa feed on species of *Leguminosae*.

**Tarucus mediterraneae Bethune-Baker**

*Tarucus mediterraneae* Bethune-Baker, 1918, *Trans. ent. Soc. Lond.*, 1917 : 281, pl. xiv, figs. 7 and 7a (♂), 7b (♀), pl. xvi, fig. 7, ♂ genitalia, pl. xix, fig. 26, ♂ androconial scale; ♂, ♀, Egypt (Alexandria). Also recorded from Algeria and Palestine.

*Tarucus mediterraneus* B.-Baker, Stempffer, 1942, *Ann. Soc. ent. France*, cxi : 120.

Localities : Siwa, 21.iv.35 (10 ♂♂), 5.v.35 (1 ♂, 1 ♀), 18.vi.35 (1 ♀), 21.vi.35 (1 ♂, 1 ♀), 9-10.vii.35 (1 ♂), 14.vii.35 (1 ♂), 17.vii.35 (1 ♂, 1 ♀), 26.vii.35 (1 ♂), 7.viii.35 (1 ♂); Siwa Ilrhabit Nachou, 15.v.35 (1 ♂); and Maragi, 14.viii.35 (2 ♀♀). — Total 18 ♂♂, 6 ♀♀, all collected by J. Omer-Cooper.

Distribution (according to Stempffer, 1942 : 120) : Nigeria, Senegal, Mauritania, Morocco, Algeria, Tunisia, Egypt, The Sudan, Abyssinia, Somaliland, Kenya, Turkey in Asia, Mesopotamia and Persia.

Remarks : *Tarucus theophrastus* (Fabricius, 1793) flies with *T. mediterraneae* throughout most of its range and a third species, *T. balkanicus* (Freyer, 1844) occurs in Morocco, Algeria, Egypt, The Sudan and Syria. These three species have similar facies and their identification is difficult or doubtful without examination of the male genitalia.

It is probable, that the larva feeds on *Zizyphus*.

**Syntarucus telicanus egyptiaca (Bethune-Baker, 1894).**

*Lycaena egyptiaca* Bethune-Baker, 1894, *Trans. ent. Soc. Lond.*, 1894 : 33, pl. i, fig. 1 ♂; ♂, ♀, Egypt, Alexandria.

*Syntarucus telicanus egyptiacus* Bethune-Baker, Stempffer, 1935, *Mission scientifique de l'Omo*, 2, Zoologie, Fasc. 12, Lepidoptera, 1. Lycaenidae : 226, fig. 3, ♂ genitalia, pl. ix, fig. 2, ♂ underside.

Localities : Siwa, 5.v.35 (5 ♂♂), 8.vi.35 (1 ♀), 15.vi.35 (1 ♀), 22.vi.35 (5 ♂♂), 30.vi.35 (1 ♂), 4.vii.35 (4 ♂♂), 17.vii.35 (1 ♂, 1 ♀); Khamissa, 18.vii.35 (2 ♂♂); and Baharein, 11-12.vi.35 (1 ♀). — Total 18 ♂♂, 4 ♀♀, all collected by J. Omer-Cooper.

Distribution : According to Stempffer (1935 : 23) *Syntarucus telicanus* (Lang, 1789) is distributed from the Cameroons, Nigeria, Sierra Leone, Senegal, Uganda, British East Africa, Nyasaland, Madagascar, Seychelles to Yemen, while the subspecies *egyptiaca* occurs in Cyrenaica and Egypt.

Remarks : The similar species of *Syntarucus* which fly together cannot be separated satisfactorily without examination of the male genitalia. The food plants of the larvae include *Medicago* and *Melilotus*.

**Zizeeria knysna karsandra (Moore, 1865)**

*Polyommatus karsandra* Moore, 1865, *Proc. Zool. Soc. Lond.*, 1865 : 505, pl. xxxi, fig. 7, ♀; ♀. Plains of North-west India.

*Zizeeria karsandra* Chapman, 1910, *Trans. ent. Soc. Lond.*, 1910 : 484.

Localities : Siwa, 18.iv.35 (5 ♂♂, 1 ♀), 24.iv.35 (3 ♂♂, 3 ♀♀), 26.iv.35 (1 ♂), 29.iv.35 (2 ♂♂, 1 ♀), 29.iv.35 (1 ♀), 5.v.35 (2 ♂♂,

and 3 ♀♀), 30.vi.35 (2 ♂♂ and 2 ♀♀), 31.v-1.vi.35 (1 ♂), 21.vi.35 (1 ♂), v.vii.35 (2 ♀♀), 17.vii.35 (1 ♂), 26.vii.35 (2 ♀♀), 5.viii.35 (1 ♀), 8.ix.35 (1 ♂); Siwa Depression Turnatee, 12.v.35 (2 ♂♂); Siwa Ilrhabit Nachou, 15.v.35 (1 ♀); Khamissa, 5.viii.35 (1 ♂); and Koreishid, 30.vi.35 (1 ♀). — Total 22 ♂♂, 18 ♀♀, all collected by J. Omer-Cooper.

Distribution: (a) Portugal, Spain, Canary Islands, Western Algeria, Morocco, West Africa to the Cape, and thence to Abyssinia, The Sudan, South Arabia (Yemen, Aden and Hadramaut), Socotra, Seychelles, Madagascar and Mauritius. — (b) Algeria (other than the Western part), Tripolitania, Egypt, Cyprus, Syria, Arabia (other than the Southern part), Mesopotamia, Baluchistan, India and Ceylon, and eastwards to Formosa, the Philippines and Australia.

*Z. knysna* has been recorded also from South France, but we have seen no specimens.

Remarks: In this widely distributed species, there are two types of male genitalia, as noted by Chapman (1910). In the "*knysna*" form, with distribution (a) above, the ventral edge of the valva terminates apically in a rostriform projection and the distal edge is straight although serrate: in the "*karsandra*" form, with distribution (b) above, there is no such rostriform projection on the valva and the distal edge is distinctly concave and with deeper serrations. As would be expected, the Siwa form is of the "*karsandra*" type, and is otherwise not distinguishable from the usual form of *Z. knysna karsandra*.

The usual food plant of the larva appears to be *Zornia diphylla*.

The African representative of the species has long been known as *Z. lysimon* (Hübner, 1803-04), but Hübner's name is preoccupied by *Papilio lisimon* Stoll, 1790, and Trimen's name *Lycaena knysna* (1862) must be used for the collective species.

#### ***Zizina otis sangra* (Moore, 1866) (\*)**

*Polyommatus sangra* Moore, 1866, *Proc. Zool. Soc. Lond.*, 1865: 772, pl. xli, fig. 8, ♂; ♂, Bengal.

Localities: Siwa, 5.v.35 (2 ♂♂, 1 ♀), 21.vi.35 (2 ♂♂, 2 ♀♀). — Total 4 ♂♂, 3 ♀♀, all collected by J. Omer-Cooper.

Distribution: (a) Gold Coast to South Africa and Uganda, Madagascar and Mauritius, Ceylon, South India to Sikkim. — (b) Japan, Liu-Kiu Islands, China, Formosa, Indo-China, Siam, Assam, Burma to Malaysi (including Christmas Island), and through the Malay Archipelago to New

(\*) See also pages 386-387 of this Bulletin [Editor].

Guinea, Australia, New Zealand, Bismarck Archipelago, Solomon Islands, New Hebrides, New Caledonia, Norfolk Island, Fiji Islands, Tonga, Samoa and the Society Islands.

Remarks : As is the case with *Zizeeria knysna*, there are two types of valva in the male of *Zizina otis*. In the Oriental type, with the distribution (b) above, the valva terminates in a long, narrow projection, and the ventral edge of the valva is studded with minute teeth in the central portion. In the African type, the terminal projection of the valva is shorter and broader and the ventral edge of the valva is smooth. It is of considerable interest that the Siwa representative of *Z. otis* has the valva of the Oriental type and, superficially, appears to be inseparable from the east Indian subspecies *sangra*. Siwa is between 3500 and 4000 miles from the nearest reservoir of the Oriental type of male genitalia in *Z. otis* and it is difficult to say whether the species is a recent arrival in Siwa or a survival from an age when the species was more widely distributed in northern Africa and the Near East.

The larva has been recorded as feeding on *Zornia diphylla*, *Alysicarpus vaginalis* and, probably, also small vetches.

#### **Lampides boeticus L.**

*Lampides boeticus* Linnaeus, 1767, *Syst. Nat., Edit. xii* : 789; ♀, « *Barbaria* » [North Africa].

Localities : Siwa, 18.iv.35 (1 ♂), 24.iv.35 (1 ♂, 1 ♀), 29.iv.35 (2 ♂♂), 1.v.35 (1 ♀), 5.v.35 (2 ♂♂, 1 ♀), 15.v.35 (1 ♀), 21.v.35 (1 ♂), 24.v.35 (2 ♀♀), 29.vi.35 (1 ♀), 18.vii.35 (1 ♂), 31.vii.35 (1 ♂), 5.viii.35 (1 ♂); Gara, 4.vii.35 (1 ♂); and Baharein, 11.vi.35 (1 ♀). — Total 11 ♂♂, 8 ♀♀, all collected by J. Omer-Cooper.

Distribution : Southern Europe to Africa, Madagascar, Mauritius and the Seychelles, Ceylon and India, Japan, South China and Formosa, and South through the Malay Archipelago to New Guinea, Australia, Hawaii, New Hebrides and New Caledonia.

Remarks : Not a species subject to local variation and occurs almost unchanged throughout its large area of distribution. The larva feeds on a variety of species of *Leguminosae* and it may well be that *Medicago sativa* constitutes the larval food plant at Siwa.



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# The Lepidoptera of the Kingdom of Egypt

## PART II

(with Text-Figures 69-114, and Plates VIII-IX)

by E.P. WILTSHIRE, F.R.E.S.

### Contents of Part II

Introduction. — Species and forms new to science. — Species new to Egypt. — Species to be deleted from the Egyptian List. — Early stages published here for the first time. — List of species illustrated in this Part. — Further references. — Second Addendum to Part I. — Systematic List, resumed. — The Egyptian Fauna; its components, distribution and probable history. — Summary.

### INTRODUCTION

*Readers should refer to Part I, p. 211 and p. 284, for an explanation of the abbreviations used hereunder, and to p. 211 for a glossary of some terms used. They should refer to Part I, pp. 209-211, for literary references hereunder if not found in the further list of references given below.*

In October 1948 a pupa from a larva which I had found in the desert hatched. It enables me to describe and illustrate hereunder the caterpillar and chrysalis, of whose identity I was till then not sure, of a moth listed in Part I, whose early stages were hitherto undescribed.

During winter 1948-49 I was able to visit the British Museum, London. I must gratefully acknowledge the assistance there given me by many different persons, especially Messrs. W.M.T. Tams and D.S. Fletcher. Most of these studies were with reference to species in Part II but one or two points were pursued regarding species listed in Part I, and mention of these is made below.

Thirdly, the Armstrong College expedition to Siwa Oasis has meanwhile reported, for the first time from Egypt, a *Lycaenid* butterfly, authoritatively identified.

Consequently before proceeding to the moths belonging to the families not yet touched on, a second Addendum to Part I is needed (the first having, of course, appeared at the end of Part I, in the 1948 Bulletin). Some miscellaneous corrigenda and addenda are included, notably a new species of *Bryoleuca*.

corrigenda see  
Vol. 34 p. 311

/H

Herr Hans Reisser has meanwhile most kindly sent me the Rebel manuscript referred to in Part I (Addendum), as well as some of the late Professor Rebel's correspondence. I do not however feel able to make wholesale use of the manuscript, for it is a compilation of records of which the author did not, when writing, see the original material, though also containing much original work and an industriously compiled bibliography. The manuscript repeats, in the part on the "Macro-Lepidoptera" families, many errors which I have already been at pains to correct, or correct in this Part. In one or two instances however I have extracted from it and quoted below something worth publishing. The many "Micro-lepidoptera" descriptions and the long list of "Micro-lepidoptera" names with data I have reluctantly decided to omit. It would really be necessary for a more up-to-date specialist to check them. If these records and new names were published now as they are, not only would there be no genitalia illustrations of the new names (and these are now considered in most cases essential) but there would not even be neurulation-figures or photographs of the types; indeed, despite the correspondence, the whereabouts of 'the micro-lepidoptera types, as of the macro-lepidoptera published in 1948, is still unknown. To launch upon the world some sixty new names of Microlepidoptera, with such a poor foundation, would only render more difficult future research and identification, and this consideration leads me, though with regret, to suppress, at least as far as I am responsible, the entire Microlepidoptera section of the Rebel manuscript. It will be returned to the Vienna Museum in due course. My regret is the greater because I am obliged to leave unworked, for the present, the Pyralidae and other Microlepidoptera families, which the late Dr. Rebel, despite my above criticisms, knew better than I can ever hope to do myself. There is also another reason for not publishing his list of these families: the Cairo collections contain rich material of these groups which Dr. Rebel, for the most part, never saw. It is unlikely that I shall stay in Egypt long enough to attempt to work these out. I wish the present work to consist of a list of species studied, in nearly every case, by myself, in accordance with modern standards, and it would be inconsistent therefore to include hereunder the relevant parts of Dr. Rebel's manuscript.

#### SPECIES AND FORMS NEW TO SCIENCE

The following names are published in this Part for the first time:

No. 138 a. *Bryoleuca minima* spec. nov.; 254. *Roeselia gallicola* spec. nov.; 268. *Sterrha sordida nili* subsp. nov.; 270. *Sterrha sordidior* spec. nov.; 271. *Sterrha mimefes africanarabica* subsp. nov.; 272. *Sterrha mareotica fusca* ab. nov.; 274. *Sterrha epaphrodita cremita* subsp. nov.; 276. *Sterrha*

*hathor* spec. nov.; 282. *Brachyglossina williamsi* spec. nov.; 283. *Tineigidia aegyptiaca* spec. nov.; 292. *Glossotrophia alfieri* spec. nov.; 293. *Chlorerythra rubriplaga sinaica* subsp. nov.; 315. *Gnophos subvariegatus claytoni* subsp. nov.; and 324. *Scodionista amoritaria abdulhamidi* subsp. nov.

### SPECIES NEW TO EGYPT

Of the three remaining species, mentioned on pp. 15-16 of the 1947 volume of this Bulletin as new to Egypt, two are found hereunder, numbered : 257 and 333. The third was a *Pyralid*.

This part also introduces, as new to Egypt, the following thirty-seven species :

63 a. *Beralade pura*; 138 a. *Bryoleuca minima*; 169. *Leptosia velocior*; 204 b. *Ulotrichopus arabicus*; 242 a. *Stenostaura* (?) *impedita*; 252. *Celama turanica*; 254. *Roeselia gallicola*; 260. *Victoria sematoperas*; 262. *Neromia pulvereisparsa*; 268. *Sterrrha sordida*; 269. *Sterrrha miserrima*; 270. *Sterrrha sordidior*; 271. *Sterrrha mimetes*; 273. *Sterrrha elongaria*; 276. *Sterrrha hathor*; 277. *Sterrrha fathmaria*; 281. *Sterrrha sanctaria*; 282. *Brachyglossina williamsi*; 283. *Tineigidia aegyptiaca*; 286. *Scopula flaccata*; 291. *Glossotrophia chalcographata*; 292. *Glossotrophia alfieri*; 293. *Chlorerythra rubriplaga*; 294. *Cosymbia pupillaria*; 295. *Thaminda rufistrigata*; 300. *Lithostege* (?) *cinerata*; 301. *Lithostege fissurata*; 307. *Eupithecia tenellata*; 312. *Phaselina* (?) *serrularia*; 313. *Mannia fatimaria*; 315. *Gnophos subvariegatus*; 316. *Gnophos* (?) *dubitarius*; 317. *Zamarada secutaria*; 319. *Atomorpha hedemanni*; 320. *Selidosema combustaria*; 322. *Tephрина sublimata*; and 324. *Scodionista amoritaria abdulhamidi*.

### SPECIES TO BE DELETED FROM THE EGYPTIAN LIST

The following twenty species have been wrongly recorded as inhabiting Egypt and must be deleted, for reasons discussed under or after the species whose numbers are given in brackets after the name of the species to be deleted, those marked (S.) because of synonymy :

*Leucania putrescens* Tr. (103; under Second Addendum below); *Celama taeniata* Snell. (252); *Celama mesomelana* Hamps. (252); *Celama erythrostigma* Hamps. (252); *Celama squalida* Stgr. (253); *Soma-brachys kenkelae* Ob. (256); *Lomographa petroffi* Andres and Seitz (S.) (259); *Chlorissa pulmentaria* Guen. (261); *Chlorissa draudti* Andres and Seitz (S.) (261-262); *Xenochlorodes beryllaria* Mann. (263, 265); *Sterrrha microptera* (267); *Sterrrha libycata* Bart. (276); *Cosymbia ruficiliaria* H.-S. (294); *Cosymbia elbaensis* Rebel (S.) (295); *Lithostege farinata* Hufn. (300); *Chloroclystis rectangulata* Mab. (302); *Eupithecia venosata* F. (308); *Tephronia cremiaria* Freyer (313); *Gnophos sacarius* Stgr. (315, 324); and *Thamnonoma vincularia* Hubn. (323).



### EARLY STAGES PUBLISHED HERE FOR THE FIRST TIME

The hitherto unrecorded early stages are described, illustrated or discussed in this Part of the following species; of many other species information regarding the early stages is also given.

No. 119. *Eumichtis aurora aegyptiaca*; 262. *Neromia pulvereisparsa*, 321. *Tephрина disputaria*; 323. *Enconista exustaria*; 329. *Cossus l-nigrum* (*niloticus*); and 331. *Paropta paradoxa* H.-S.

### LIST OF SPECIES ILLUSTRATED IN THIS PART

Unless an early stage or a part of the body is mentioned in brackets below after the name, the whole perfect insect is illustrated.

The following appear in half-tone Plates VIII-IX :

Plate VIII : Fig. 1. *Eumichtis aurora aegyptiaca* (larva); Fig. 2. *Ophiusa algira* L. (Linnaeus' Type); Fig. 3. *Celama mesoscia* Hamps. = *Nola priesneri* Rebel 1948 (Rebel's Type of the latter name); Figs. 4, 5 and 6. *Sterrhia microptera* Warr. and R. (Holo-Type: genitalia); Figs. 7 and 8. *Sterrhia granulosa* Warr. and R. (Holo-Type: genitalia).

Plate IX : Fig. 1. *Roeselia gallicola* spec. nov.; Fig. 2. *Hemidromodes affinis* Roths.; Figs. 3 and 4. *Hemidromodes affinis galala* subsp. nov.; Figs. 5 and 6. *Sterrhia hather* spec. nov.; Figs. 7, 8 and 9. *Brachyglossina williamsi* spec. nov.; Figs. 10 and 11. *Glossotrophia chalcographata sinaica* Rebel 1948; Figs. 12 and 13. *Glossotrophia alfieri* spec. nov.; Fig. 14. *Chlorerythra rubriplaga sinaica* subsp. nov.; Fig. 15. *Traminda graciliata* Rebel 1948; Fig. 16. *Traminda rufistrigata* Hamps. (= *Cosymbia elbaensis* Rebel 1948; Figs. 17 and 18. *Gnophos subvariegatus claytoni* subsp. nov.; Figs. 19 and 20. *Zamarada latilimbata* Rebel 1948; and Figs. 21 and 22. *Scodionista amoritaria abdulhamidi* subsp. nov.

The following are illustrated in black and white (in the text) :

Fig. 69. *Bryoleuca minima* spec. nov.; Fig. 70. *Bryoleuca trilinea* B.-B.; Fig. 71. *Bryoleuca minima* spec. nov. (genitalia); Fig. 72. *Bryoleuca trilinea* B.-B. (genitalia); Figs. 73-75. *Celama turanica minima* Warn. (genitalia and forewing); Figs. 76 and 77. *Celama mesoscia* Hamps. (forewing and genitalia); Fig. 78. *Roeselia gallicola* spec. nov. (genitalia); Fig. 79. *Somabrachys infuscata* (Klug); Fig. 80. *Somabrachys aegrota* (Klug); Fig. 81. *Somabrachys infuscata* (genitalia); Fig. 82. *Somabrachys aegrota* (genitalia); Fig. 83. *Neromia pulvereisparsa* Hamps. (genitalia); Fig. 84. *Hemidromodes affinis* Roths. (genitalia); Fig. 85. *Hemidromodes robusta* Prout (from Arabia) (genitalia); Fig. 86. *Microloxia herbaria* Hubn. (genitalia); Fig. 87. *Acidaliastis micra* Hamps. (genitalia); Figs. 88 and 89. *Sterrhia granulosa* Warr. and R. (genitalia); Figs. 90, 91 and 96.

*Sterrhia mimetes* (genitalia); Figs. 92, 93 and 97. *Sterrhia sordida* Roths. (genitalia); Figs. 94, 95 and 98. *Sterrhia sordidior* spec. nov.; Fig. 99. *Sterrhia miserrima* Tur. (genitalia); Fig. 100. *Sterrhia hathor* spec. nov. (genitalia); Figs. 101 and 102. *Brachyglossina williamsi* spec. nov. (genitalia); Fig. 103. *Tineigidia aegyptiaca* spec. nov. (genitalia); Fig. 104. *Glossotrophia alfieri* spec. nov. (genitalia); Fig. 105. *Chlorerythra rubriplaga* Warr. (genitalia); Fig. 106. *Gnophos subvariegatus claytoni* subsp. nov. (genitalia); 107. *Gnophos subvariegatus* Stgr. (genitalia); Fig. 108. *Zamarada secutaria* Guen. (genitalia); 109. *Zamarada minimaria iranica* Brandt (genitalia); Fig. 110. *Zamarada latilimbata* Rebel 1948 (genitalia); Fig. 111. *Enconista exustaria* Stgr. (genitalia); Fig. 112. *Scodionista amoritaria abdulhamidi* subsp. nov. (genitalia); Fig. 113. *Gnophos sacrarius* Stgr. (from Jerusalem) (genitalia); Fig. 114. *Scodionista astragali* Wilts. 1949 (from Persia) (genitalia).

#### FURTHER REFERENCES

See pp. 209-211 of Part I (this Bulletin, XXXII, 1948) for works to which reference is made in the text of both Parts. Reference is made in Part II to the following works:

- Blankenhorn, 1914 : Syrien, Arabien, und Mesopotamien (Heidelberg).
- Corbet, A.S., 1948 : Observations on the species of *Rhopalocera* common to Madagascar and the Oriental Region (*Trans. R. Ent. Soc. London*, 99, Part 17).
- Corbet, A.S. and Tams, W.H.T., 1943 : Keys for the identification of the Lepidoptera infesting stored food products (*P.Z.S.*, Ser. B, Vol. 113, pp. 55-148).
- Cott, Hugh B., 1940 : Adaptive coloration in animals (Methuen, London).
- Jeannel, Dr. R., 1942 : La genèse des faunes terrestres : éléments de biogéographie (Presses universitaires de France, Paris).
- Longstaff, G.B., 1911 : Three weeks in the Sudan. (*Ent. Monthly Mag.*, XXII).
- Longstaff, G.B., 1913 : The butterflies of the White Nile (*Trans. Ent. Soc. London*, June 13).
- Pierce, F.N., 1914 : The genitalia of the British Geometridae (Liverpool).
- Pierce, F.N., and Beirne, B.P., 1941 : The Genitalia of the British *Rhopalocera* and the Larger Moths (Oundle).
- Rebel, H., 1948 : Neue Heteroceren aus Aegypten (*Zeits. Wiener Ent. Ges.*, 32 Jg., Nos. 5-7, pp. 49-60, Published 10.v.48).

Sterneck, Dr. J. von, 1940-1 : Versuch einer Darstellung der systematischen Beziehungen bei der palaarktischen Sterrhinae (Acidaliinae) (*Zeits. Wiener Ent. Ver.*, 25-26 Jahrg.).

Warnecke, G., 1946 : Une nouvelle *Nolina* européenne du groupe de *Celama centonalis* Hubn. (*Rev. Fr. Lép.*, X).

### SYSTEMATIC LIST (continued)

#### (Second Addendum to Part I, containing corrigenda)

Page 207, line 18 : for 133, 134, 135 and 158 read 124 and 160.

Page 212, line 18 : for latitudinal read longitudinal.

(2. *Danaïs chrysippus* f. *dorippus* Klug.

Mr. Riley has kindly reminded me that *dorippus* is not distinct but merely a Tropical form of *chrysippus*, No. 3 in the list).

30a. *Zizina otis* (F.) subsp. *sangra* Moore.

For the remarkable discovery at Siwa Oasis of this species, new to Egypt, and its zoogeographical interest, see pp. 377-378 of this Bulletin (leg. Armstrong College Expedition).

The species is easily determined by the underside markings, especially on the hindwing, from other similar *Lycaenidae*, and the only Egyptian species with which any confusion might occur is (30) *karsandra* (see *Trans. Ent. Soc. London*, 1910, Plates LI and LII : *lysimon* (= *knysna*) and *karsandra*, compared with the figures of *sangra* and *indica*). None of the collections in Cairo contain anything approaching the latter, and *otis* must therefore in Egypt probably be restricted to Siwa or perhaps also the neighbouring oases also. The identification of the Siwa examples, by a recognised authority, must be accepted. The male genitalia distinguished the various *otis* subspecies from one another; but dissection is not necessary to distinguish *otis* from *knysna karsandra*. The Egyptian *otis* is the Tropical (Indian) subspecies of a Paletropical species.

Corbet's 1948 article uses a different nomenclature for the *otis* forms from that in his article in this Bulletin. In the former he treats the Oriental forms as one subspecies, *otis*, and the African as another, *antanossa*. In the latter however he uses the name *otis* for the African, and *sangra* for the Asiatic (Indian). I have enquired from Mr. Gabriel which was Corbet's later view, and I learn that Corbet shortly before his death arranged ~~by~~ *the* *otis* forms in the British Museum thus : typical *otis*, from China and Formosa; subsp. *decreta* Butl., from South India and Ceylon; subsp. *sangra*, from the Andamans, Nicobar Islands, and Burma (with the Siwa form coming very close to this subspecies, on structural grounds);

and subsp. *antanossa* Mab. from West Africa, Kenya, Tanganyika and Madagascar.

Siwa oasis contains at least one other remarkable relic of an Asiatic, non-african fauna, not found elsewhere in Egypt, viz. the Eremic tree *Populus euphratica*.

Page 224 :

My reasons for elevating the Pyrginae being inadequate the following amendments should be made : page 224, line 10, for Family Pyrgidae read Family Hesperidae, subfamily Pyrginae, and on page 225, line 26, for Family Hesperidae read subfamily Hesperinae.

(62. page 229 : line 6 and line 14, for *obliquata* read *obsoleta*).

63a. *Beralade pura* Warr. and Roths.

From Rebel's unpublished manuscript, kindly lent me by Dr. Reisser, I see that he thus identified a ♂ received from Gebel Elba (12.i.33). I could find no specimen thereof in the Cairo collections but have no reason to doubt that he was right. Rebel, it may be remarked, treated, and probably rightly treated, the genus *Chilena* as a synonym of *Beralade*. New to Egypt, Tropical African; doubtless an *Acacia* feeder.

(66. *Nadiasa repanda aegyptiaca* Bang.-Haas.

The polyphagy of this species on trees was mentioned in Part I, but not that it also feeds on aquatic plants and belongs therefore also to the fauna of the canal-banks and reed-swamps of the Nile valley and delta. I had previously been puzzled by a specimen (A.A.) marked "feeding on triangular leaves of aquatic plant "sammar" in ditch." I am still unable to identify this plant from the vernacular name given, but on 7.v.49 I found a larva of this species feeding on *Typha angustifolia* ("burdi") in a ditch near Kerdasa).

(82. *Agrotis puta* Hubn.

Dr. E. Berio has kindly reminded me that since the name *lignosa* God. is a primary homonym he has proposed that it be replaced by *goli-gnosa*. This should be done in cases where *lignosa* is used to denote a subspecies. I am not sure whether any change is necessary in cases, such as the Egyptian, where the name is used in a lower than subspecific capacity).

(89a., page 287 : for later read latter).

(103. *Leucania punctosa* Tr.

Boursin has pointed out to me that *punctosa* replaces *putrescens* Hubn. in the Eastern Mediterranean and that this name is therefore probably the right one for the species previously known by writers on Egypt's fauna as *putrescens*. An examination of the male genitalia of the Port-Said

specimen referred to by Storey as *putrescens*, and its markings also, shows it to be *punctosa* Tr.).

(108. *Metlaouia oberthuri* Deck.

A lovely whitish and blue-grey ♂, taken by Petroff at Burg El-Arab 10.i.27, corresponds perfectly to the text and plate of *Metlaouia fiorii* Turati. The genitalia are identical with *oberthuri* (Part I, fig. 19). I conclude *fiorii* is not even a race but a mere variant form or aberration of *oberthuri* Deck. (Syn. nov.).

(119. *Eumichtis aurora aegyptiaca* Wilt. 1947.

The larva of this desert species, hitherto undescribed, is pale grey-brown, faintly brown-mottled, paler grey ventrally; dorsal line, faint, with fine central line interrupted and edged with darker; other lines, similar, except for the subdorsal lines, which are rather smudgy black and widely interrupted. Head, pale brown. Spiracles, pink, black-rimmed (Plate VIII, fig. 1). It feeds at night during the winter. An example was found in the desert near Helwan on *Zygophyllum coccineum*, but in captivity it only ate *Zilla spinosa*; the photo shows it on the former. These two plants are the dominant species in the depressions and wadis of the Eastern desert south-east of Cairo. The moth has previously been bred from pupae found under *Zygophyllum* bushes in the same place, but a caterpillar feeding on one might as easily pupate under the other of the two plants as under its own foodplant.

It might of course feed on both, although this was not my experience, or might even be polyphagous.

The pupa is dark glossy brownish black, heavily chitined; the cremaster consists of two rather straight spines. It is formed in a cocoon in the sand. The larva buried on 7.ii.48 and the moth hatched on 25.x.48).

(120b :

In Part I, I was unable satisfactorily to guess the right name of the species taken by Miss Jackson at Luxor and recorded as *Atethmia xerampelina maculifera* Stgr. I am still convinced for the reasons there given that this identification was wrong but I now think it can be more probably explained by supposing that Miss Jackson actually caught *Crypsotidia maculifera* Stgr. (No. 205) and that by some error the wrong genus was given).

(133. *Catamecia minima* Swinh. = *jordana* Stgr. (Syn. nov.).

The male genitalia of the El-Arish specimens, taken close to the Palestinian border, perfectly agree with the types, from Sind, of Swinhoe's species, hitherto usually considered distinct. In my view *minima* is a small desert form which in most oriental parts of the range of the



species can occur together with typical f. *jordana*. The latter name therefore is at the best racial, perhaps no more than varietal. There is little difference between *jordana* and *mauretanica*).

**138a. *Bryoleuca minima* spec. nov. (Fig. 69).**

The specimen has been overlooked till this year because placed with the Cossidae; it was sent to Joannis who gave his opinion: "Quite unknown to me; a Cossid." The nervulation and male genitalia however leave no doubt that it is a *Bryoleuca*.

Smaller than *trilinea* B.-B. (138) (fig. 70) and its form *syrticola* Tur. Differs also by its darker coloration, ♂ antenna, more excavated costa (giving it a Pyraloid wing-shape) and male genitalia. It inhabits a quite different region from *trilinea*.

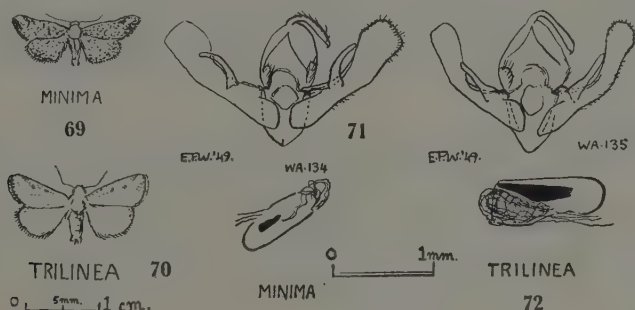


Fig. 69 : *Bryoleuca minima* spec. nov., ♂. — Fig. 70 : *Bryoleuca trilinea* B.-B., ♂ (pale, less-marked form). — Figs. 71 and 72 : *Bryoleuca* ♂ genitalia, open ventral view, with aedeagus separated : (71) *minima* spec. nov., (72) *trilinea* B.-B.

♂ antenna : with long cilia, about twice as long as diameter of shaft (in *trilinea*, shaft of antennua is broader, cilia proportionately shorter, no longer than diameter).

Forewing, with excavated costa and pointed apex; narrow. Smoky grey, with traces of brownish black fasciae; also a few paler grey patches, especially near the apex. Fringes, smoky grey (probably the species is variable and in a longer series some would be clearer-marked). Hindwing, brown-grey, darker towards termen. Hindwing nervures 3 and 4 on a long stalk, 6 and 7 on a shorter stalk. The discocellular nervure is obsolete and only present at lower end, where it leaves nervure 3 midway between 2 and 4 and in a backward direction. Nervure 5 absent.

♂ genitalia : harpe, stronger, more arched than in *trilinea*; valve, less constricted in centre, with larger, sub-rectangular cucullus; aedeagus

smaller, cornutus therein much smaller (Figs. 71 and 72 shew difference in tail-parts of these two species).

Holo-Type: ♂, 15.iv.21, Ougret El-Sheikh (Wadi Hof), Eastern Desert, in coll. A. Alfieri.

(143. *Propsalta capensis* Warren-Seitz (? nec Guenée).

Mr. Tams has drawn my attention to the discrepancy between Guenée's description of *capensis* and Warren's. Perhaps therefore Guenée's name should be used for some other species (? in the genus *Condica*) but until this question has been studied the species, taken at Merrsa Halaib, can be called as above).

(160a :

My remarks on the deletion of *Nonagrius maritima* Tausch., can now be confirmed from Hayward's actual material which is at the British Museum; his long series from Aswan is now correctly identified as the Pyralid *Lamoria jordanis* Rag. There are no examples of *N. maritima* from Egypt (there).

169a. *Leptosia velocior* Stgr.

In Rebel's manuscript I find mention of this species from the Mariout and presume he was able to distinguish it from no. 169. I have not seen an Egyptian example.

(172. *Eublemma ecthaemata* Hamps. 1896 (= *Coccidiphaga spirogramma* Reb.).

In his manuscript Rebel gives this synonymy and sinks his own name).

Page 291 :

(184a. *Ozarba fuscescens* Rebel.

This name may well be a synonym of *flavidiscata* Hamps. At least, Dr. E. Berio thinks so, from my drawing (fig. 65) of the genitalia; the synonymy however is not yet confirmed, and Dr. Berio expressed his opinion with reserves, not having yet seen a photo of *fuscescens*). f. d. 34 f. [34]

(188b. *Thalerastris insignis* Butl. ab. *rex* Wilt. 1948.

A comparison of the ♂ genitalia of topotypes of "*Eulocastra insignis* Butl." from the British Museum's Aden material (leg. Yerbury) shows that *rex* is only an aberration of this species).

From Rebel's manuscript it appears that he received from the Gebel Elba a ♀ which he considered an aberration of *insignis*; from his account of it, it is evidently different from *rex*. From typical *insignis* it differs by lacking the basal fascia but has several cross-stripes in the brown marginal area. If he is right, *insignis* can be added to the Egyptian list.

204b. *Ulotrichopus arabicus* Rebel 1907.

Rebel in his unpublished manuscript says that he received a ♀ labelled « Gebel Elba, Wadi Aideb, 17.i.33, leg. Priesner » which agrees with his type of *arabicus*. Since he also

received *U. tinctipennis* Hamps. (204a) from the same place and distinguished the two species in his manuscript, there is some reason to accept this addition to the Egyptian list, though I have not seen an Egyptian example of *arabicus*, nor verified that it is a distinct species.

(208. *Ophiusa albivitta* Moore.

Mr. Tams has inspected and photographed the Linnean type of *O. algira* L. (Plate VIII, fig. 2) and it appears from this photo to have the less irregularly constricted fascia which I believe to characterise the Tropical rather than the Temperate species. It would however be premature to sink *albivitta* as a synonym of *algira* because there may perhaps be more than one species in the *algira* group with this character, and much material must be examined critically before this possibility can be eliminated. The type of *albivitta* cannot be found. If it should eventually prove that there are only two species in the *algira* group, i.e. those distinguished by the structural character illustrated in figs. 56 and 57 of Part I (this Bulletin 1948) and that the fascia-shape is also a good character for separating these two species, and if further examination of the Linnean type and description of *algira* confirm that it belongs to the Tropical (figs. 55 and 56, *ibid.*) rather than the Temperate (fig. 57) species, then the name *algira* will have to be used for the Egyptian, African and Indian species, and Moore's name will become a synonym. The question of what to call the European and Temperate Asiatic species will in that event have to be considered, and probably *triangularis* Hubn., or *achatina* Sulz. will have to be used for the species called *algira* by Spuler, Warren-Seitz III, and myself (1948). Pending the completion of these studies, which I am unable to pursue myself, the Seitzian usage can continue, and the Egyptian species can still be called *albivitta* Moore.

242b. Notodontidae : *Stenostaura* ? *impedita* Walker.

Rebel in his unpublished manuscript doubtfully refers to the above species some ♀♀ received from Gebel Elba, Wadi Canisrob, 24.i.33, leg. Priesner; he thinks they may be a new species or at least a local form of the species figured by Gaede-Seitz XIV, p. 430, Plate 71d. I can find nothing in the Cairo collections corresponding to this description without name, translated below, but it is evident that we have here the first Notodontid species recorded from Egypt, and Rebel's remarks therefore deserve preservation : « ♀ antenna, shortly bipectinate two-thirds of length. Tongue, absent. Hind-tibia with one pair spurs. Forewing, ash-grey with whitish basal field projecting in the middle, and an obsolete whitish fascia before the termen. Hindwing and abdomen whitish grey. Forewing length, 12 mm. Span, 25 mm. »

(244. *Laelia innotata* (Walker) = *flavipalpata* (Stgr.).

Mr. C.L. Collenette has pointed out that Walker's above name is the earliest for this species. He also considers that it falls into the genus *Laelia*, and since he is the only world-Lymantriid-specialist, his opinion must be followed).

## SYSTEMATIC LIST (resumed)

Sub-family : *Nolinae*

I am indebted to Mr. W.H.T. Tams of the British Museum for investigating the genitalia of the holo-type of *Celama mesoscia* Hamps. and others in my presence, and also comparing a photo of the type of *Nola priesneri* Rebel 1948 therewith in my absence; I am indebted to Herr Hans Reisser of Vienna for supplying this photograph; and I am indebted to Herr Landgerichtsdirektor Georg Warnecke for aid by letter on the particularly delicate problems presented by the Egyptian representatives of this sub-family. I think, as the result of this assistance and a certain amount of original work, I can claim to have cleared up the confusion which existed therein, as far as Egypt is concerned.

**251. *Celama mesoscia* Hamps. (= *Nola priesneri* Rebel 1948, nov. syn.) (Plate VIII, fig. 3).**

This little-known species is particularly rare. It is superficially similar and very closely related to, yet structurally quite distinct and also in most cases possible to distinguish superficially from, the following No. 252, which is far commoner. They both belong to the same ecofauna, the Nile valley oasis fauna, but their biology is unknown. This species appears to be multivoltine, but only three examples have been taken to my knowledge; of these, I have seen two, and seen a photo of the third (Plate VIII, fig. 3).

The first was taken by Dudgeon at Beni Suef and described under the name *mesoscia* Hampson 1915. It was a ♀ and this holo-type is in the British Museum. It was illustrated in the original description. Dudgeon took in the same place and on the same and subsequent dates many examples of the next species, No. 252, some of which are at Doqqi (M.), others in the British Museum. They were placed under *taeniata* Snellen. This name is to be deleted, but the distinctions are discussed under No. 252. The name *mesoscia* has been overlooked by Andres-Seitz and most writers on Egypt.

The second known specimen, a ♂, which I now designate as the ne-allo-type of *mesoscia*, is at Doqqi (M.), having been taken at Tourah on 28.viii.17. Its genitalia are illustrated (fig. 77).

The third known specimen, also a ♂, was taken by Prof. Priesner on 14.vi.33 at Maadi. It was described as *Nola priesneri* sp.n. Rebel 1948, and this holo-type of Rebel's name is at Vienna. I received copies of a photograph of it recently and have ascertained that in pattern it agrees with the holo-type of *mesoscia*. The ne-allo-type agrees with this photo.

The superficial distinction between *mesoscia* = *priesneri* and the following, No. 252, is the course of the postmedian fascia, bordering the

median shade (cf. figs. 75 and 76). Presumably the forewing varies in intensity of marking and in coloration in the same way as does No. 252.

Structurally, the following differences should be noted : in the ♀ genitalia (holo-type), the circumference of the ostium bursae of *mesoscia* is not sclerotised in ring-form, as in *turanica*, but a sub-rectangular ventral plate is present anterior to the ostium. The bursa copulatrix is without a signum. The ♂ genitalia (ne-allo-type, fig. 77) are very similar to those of *turanica* (No. 252) but the end of the ventral lobe of the valve is not evenly rounded as in that species, but is formed into a small rounded lobe at the ventral corner projecting further than the upper corner of the ventral lobe. The harpe, which in both is placed on this ventral lobe near its base, also appears somewhat weaker in *mesoscia*.

#### 252. *Celama turanica minima* Warnecke 1938.

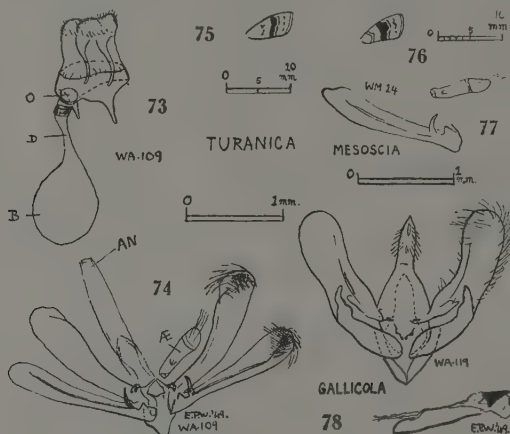
This common Nile valley oasis-moth has been recorded under many names, and until Warnecke described the East Mediterranean race on a few specimens from Egypt and Syria, had not been attributed to the right species.

Storey recorded it as *mesomelana* Hamps., and Andres-Seitz (1923) repeated this name and added a further wrong one, *taeniata* Snell. Another wrong determination of it which has perhaps not been published was *erythrostigma* Hamps. These three names are to be deleted from the Egyptian list. Of the three, confusion with *taeniata* was the most excusable, for it is superficially rather similar (see Warnecke 1937, *L'Amateur de Papillons* VIII, p. 170, for the superficial differences between *taeniata*, *mesomelana*, and the French form which he there described as *henrioti* sp.n. and which is most closely related to *turanica minima*). Thanks to Mr. W.H.T. Tams I am able to add an important structural distinction : in *taeniata* Snellen (which, despite its attributed wide range, is only certainly known from the East Indies) the bursa contains a signum. *Celama fragilis* Swinh. (Burma) also resembles *turanica* and *taeniata* superficially. Its ♂ genitalia have been examined by Mr. Tams and are distinct from those of *turanica minima*. Staudiger's name *turanica* thus seems the earliest for this species, the typical form being from Margelan (Turan, Central Asia).

Warnecke described the race *minima* in *Entom. Rundschau* 55, pp. 472-474, 1938, from Egyptian and Syrian specimens apparently a little smaller and less brightly-marked than the normal Egyptian form. His name must be used for the Egyptian race, unless it should prove that either *parvula* Chrét. or *henrioti* is, despite the differences he mentions, in fact identical. In 1938 Warnecke still considered *henrioti* a distinct species



from *turanica*, and mentioned the length of cilia on the ♂ antenna as a structural difference. The ♂ genitalia of *henrioti* would appear from descriptions and a rough sketch to be identical with those of the Egyptian *turanica* form, though I have not been able to compare the two properly. It would appear that *parvula* Chrét. (Algeria) is a link between the two. If the latter is conspecific with *henrioti*, being prior, *parvula* would be the specific name of the French species, with *henrioti* as the race-name, if



Figs. 73 to 77 : Two *Celama* species of Egypt and their distinctive characters : (73-75) *turanica minima* Warn., (76-77) *mesoscia* Hamps.; (73) ♀ genitalia (O = ostium bursae, D = ductus bursae, B = bursa copulatrix); (74) ♂ genitalia, open ventral view, with aedeagus detached (AN = anus, AE = aedeagus); (75 and 76) forewings; (77) ♂ genitalia, ventral open view with aedeagus separated, showing ventral lobe of left valve and aedeagus only.

Fig. 78 : *Roeselia gallicola* spec. nov., ♂ genitalia ventral open view, with aedeagus separated.

really distinct. Since ♀ genitalia of Algerian specimens in the British Museum, presumably *parvula* Chrét., though placed, with Dudgeon's Beni-Suef examples, under "*taeniata*" by an earlier hand, shew the characters described below as typical of *turanica*, I incline to consider *turanica*, *parvula*, *henrioti* and *minima* all as belonging (in that order of priority) to a single species of which the characters are as follows.

♂ antenna, with fascicles of cilia.

♀ genitalia, with circumference of ostium bursae sclerotised in ring-form; ductus bursa chitinised cylindrically near ostium; bursa copulatrix without signum, very weak (fig. 73).

♂ genitalia, with valve divided into a dorsal and a ventral lobe, of about equal proportions, both with evenly rounded ends, the ventral armed

with a harpe near the base. Uncus absent, or weak, concealed by a long chitinised anus. Aedeagus containing a small chitinous plate (fig. 76). 14

Superficially, the forewing median shade with the postmedian fascia running a straighter course, usually helps to distinguish this from *mesoscia* (251), but the species is very variable in intensity of markings, and also to some extent in the course of this fascia which in a few Egyptian examples approaches that of *mesoscia*; in these examples a genitalia examination has proved that they belong to *turanica*. It is therefore just possible that *priesneri* is a synonym not of *mesoscia* but of *turanica minima*. In the same way, one of the para-types of *henrioti*, namely that shewn in fig. 9, Pl. IV of *Amp. Pap.*, VIII, 1937, approaches *mesoscia*; it would be interesting to examine its genitalia. The figures 75 and 76 shew the difference in forewing-marking between *turanica* and *mesoscia* schematically. For a photograph of the latter, see that of the *priesneri* type (Plate VIII, fig. 3), and for photos of specimens exactly like the Egyptian *turanica minima* see the photos of the type of *henrioti* in the 1937 plate referred to above. The average Egyptian specimen, being of a white ground colour and strongly marked, resembles *henrioti* perfectly. I have taken this species in Iraq (Basra and Bagdad) and these examples are probably best called simply *turanica*; they agree in ♀ genitalia with the North African (but there is a second *Celama* species in Iraq, near *nec squalida* Stgr., still undetermined, possibly new: it is browner, and its antennae are ciliate, but not with fascicles of cilia as in *turanica* (Staudinger described *squalida* as having fairly strongly pectinated antennae)).

The range of *turanica* probably also extends into Tropical Africa, for Mr. Tams found in the British Museum a ♀ from East Africa with the characteristic ringed ostium described above.

Besides the Egyptian localities already mentioned (Beni Suef, Maadi) there are examples (A.A.) from the Delta. I suspect it feeds on tamarisks, and may be in some districts polyphagous.

### 253. *Celama aegyptiaca* Snellen.

Storey and Hayward reported this species under the wrong name of *squalida* Stgr., and Andres-Seitz (1923), while writing about it under its right name, also reported *squalida*, following the older determination. Staudinger's name is to be deleted. In *aegyptiaca* the forewing fasciae are much darker and less straight, and their course is not parallel with the outer margin, as in typical *squalida*, of the type of which Herr Warnecke has kindly sent me a photograph (it was taken in Malaga). The strong darkening of the postmedian fascia close to the hind margin is characteristic of *aegyptiaca*.

The present species is the commonest of the Egyptian Noline moths. Wherever Sunt-trees (*Acacia nilotica*) are left growing, it will be found, coming to light, sitting on the trunks, and feeding in the larval stage on the flowers. It inhabits the Nile valley oasis from the neighbourhood of Cairo to Aswan. It probably also inhabits the Delta. A brief account of the early stages was given by Andres-Seitz (1923). A brief note on its genitalia appears under the following species (254).

Endemic eremic. An oasis moth.

**254. *Roeselia gallicola* spec. nov. (Plate IX, fig. 1).**

This fascinating but rare new species is best introduced in this genus. At present the Nolinae are diagnosed into genera on the basis of the neururation, following Hampson's system. The male genitalia seem to some extent to confirm the main generic grouping, but perhaps will not do so completely for while Hampson puts under *Nola* and *Celama* two groups of species each with a characteristic neururation, the genus *Roeselia* as set up by him, contains a great variety of neururation-types; *gallicola* comes close to some of them, though apparently of an individual neururation-type; its valve agrees in form with that of *Roeselia strigula* Schiff. and *albula* Schiff., and this would seem to justify its being described as a *Roeselia*. However, an eventual revision of the world Nolinae on the basis of genitalia and other characters seems desirable and may necessitate a change. At present, two groups can be easily diagnosed, on the basis of the male genitalia, and are of probable generic worth: (1) valve: single, with harpe more or less as in *Agrotis*; uncus: less developed than in Agrotidae but more so than in next group, usually tapered (*Roeselia albula*, *strigula*, *gallicola* and *Nola impura* Man.). (2) valve: divided, with a small harpe near base of ventral part; uncus: undeveloped, anus long and sclerotised (*Celama centonalis* Hubn. = *aerugla* Hubn., *confusalis* H.-S., *holsatica* Saub., *dresnayi* Warn., the *turanica-henriotti* group (see No. 252), *mesoscia* Hamps. (251), and doubtless others (\*). (It should be noted that *Celama aegyptiaca* (253) does not fit into this or the first group, having single valves of peculiar form, and a different anus and 10th tergite). So much for the generic relationship of the new species *gallicola* which I describe:

Palp, hairy, 3rd segment, long, down-turned.

♂ antenna, bipectinate, but not to tip, with hair-tuft at base.

Palp, head, antenna, thorax, legs, abdomen and forewing, dull brown. Hindwing and undersides, paler brown.

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(\*) I have placed the above names in the two genera partly on the basis of my own investigations of their anatomy, partly on the basis of the genitalia-figures of Pierce and Beirne (1941) and Warnecke (1946).

Forewing neurulation : nervures 4 and 5 connate, 7 missing, 8+9+10+11 stalked, 11 on a short stalk, coming away before 8, 9 and 10 on a long stalk, 9 being apical.

Hindwing neurulation : nervures 6 and 7 on a long stalk, 8 from cell before corner; 4 or 5 missing.

Forewing markings : two dark brown scale-tufts along the radial nervure between the base and the median area. Two other dark brown scale-patches in the cell in the median area, the second being smaller and less compact. Median area, defined by dark brown interrupted fasciae, the ante-median being only clear below the cell, where it is incurved about nervure 1, the straighter post-median also obsolete above nervure 3. The nervures appear darker crossing the wide featureless submarginal area. Fringes, darker near termen, paler brown distally.

Span : 20 mm.

Male genitalia, see fig. 78.

Holo-Type : ♂, hatched ii.1911, from larva found "in galls of thrips on *Acacia arabica*, Ezbet Nakhlé, near Cairo" (in coll. Alfieri). This is the tree referred to elsewhere in this list as *A. nilotica*. This remarkable biology was noted by Willcocks (A Survey of the more important Economic Insects and Mites of Egypt, Bull. No. 1, Technical Section, Sultanic Agricultural Society, Cairo, 1922, p. 255), who mentioned this moth as "*Nola spec.*"

No other example is known. Probably an oasis moth; ?endemic Eremic.

#### Super-Family : ZYGAENOIDEA

#### Family : MEGALOPYGIDAE

##### 255. *Somabrachys aegrota* Klug (fig. 80).

Only in the Mariout (P.) whence a series was bred from larvae found at Ikingi. Univoltine, autumnal. The ♂ genitalia are also illustrated (fig. 82). A North African littoral steppe species, not found further east, or south of the Mariout.

The examples in collection Petroff were misidentified as *infusata*.

##### 256. *Somabrachys infusata* Klug (fig. 79).

Only in the Mariout (P.). Univoltine, autumnal. The ♂ genitalia are also illustrated (fig. 81). The larva was described in Andres-Seitz 1923, but whether he correctly distinguished the two Egyptian species, I do not know. The addition of a third species of *Somabrachys* in Andres-Seitz

1925 must be quite wrong, for the example in collection Petroff labelled *khenchelae* Ob. is in fact *infuscata* Klug, as will be seen from my text-

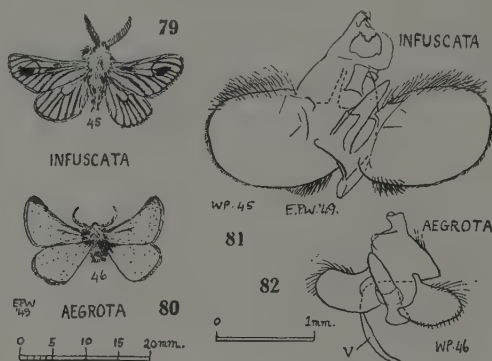


Fig. 79 : *Somabrachys infuscata* (Klug), ♂. — Fig. 80 : *Somabrachys aegrota* (Klug), ♂. — Figs. 81 and 82 : *Somabrachys* ♂ genitalia, open ventral view; (81) *infuscata* (Klug); (82) *aegrota* (Klug). (V = vinculum, broken).

figure and genitalia; see also Hering in Seitz II Suppt. Klug's plate is bad but his text is explicit. The name *khenchelae* is to be deleted.

#### Family : COCHLIDIIDAE

##### 257. *Coenobasis farouki* Wilts.

Described and illustrated in colour in this Bulletin (vol. 31, 1947). In Egypt only known from South Sinai, flying in iv. But it also inhabits the Western Arabian mountains southwards across the Tropic, and I have seen examples of it from Somaliland. Typical *postflavida* Hamps. have green-banded legs; I have seen the type of Hampson's Tropical African species in the British Museum and the character I have mentioned is a good one, it was, of course, stressed in the original description. The genitalia have not been compared yet, for there seem to be very few examples of true *postflavida* in existence. A Red-Sea Eremic species, of Tropical ancestry, but inhabiting Tropical and Palearctic territory. A desert-mountain moth, rarely found in the Red Sea coastal plains.

(Since writing this, I have received typical material of *postflavida* from Eritrea (near Asmara). All the legs are green and black banded, and the rich blue-green ground-colour makes the form strikingly different from *farouki*. The foodplant there is said to be *Acacia abyssinica*. Probably therefore the foodplant of *C. farouki* is also an *Acacia* (E.P.W.)).



**Family : ZYGAENIDAE**

**258. Procris orana Aust.**

Inhabits the Eastern Desert and Mariout. There is a series (A.A.) from various localities in the former taken in ii, iii and iv, also two from the Mariout labelled : 25.v.27, and 25.vii.27, Burg El-Arab; presumably the latter month (vii) is a misprint for v.

The biology was described in detail by Andres in Andres-Seitz 1923.

North-African Eremic. Univoltine vernal.

Foodplant : *Echinops spinosus*.

**Super-Family : PYRALOIDEA**

The first two families in this group, the Cymatophoridae and the Drepanidae, seem to be quite absent from Egypt.

**Family : GEOMETRIDAE**

Though I have done quite a lot of original work on this family my debt to Mr. D.S. Fletcher and Herr Hans Reisser is very great. The former has examined the structure of specimens in the British Museum of important and rare species, and the latter has supplied me unfliningly with his most valuable opinions and also otherwise unavailable literature. I am grateful to Monsieur Charles Rungs for assistance by letter.

**Sub-Family : Oenochrominae**

**259. Eumegethes tenuis Stgr. (= Lomographa petroffi Andres-Seitz (nov. syn.).**

Only known from Mariout, in Egypt, but elsewhere found westward along the North African coast.

**Sub-Family : Hemitheinae**

**260. Victoria sematoperas Prout.**

In his manuscript Rebel says that he received a male of this species, 31.i.33, Wadi Aideb, Gebel Elba (leg. Priesner). There is nothing in the Cairo collections corresponding to it, but I see no reason to doubt the record. The moth was previously known from Somaliland.

**261. Chlorissa faustinata Mill.**

This pretty emerald moth is the commonest of the sub-family in Egypt and occurs at Alexandria, Ikingi-Mariout, and southwards on oasis-ground to Aswan, flying in most months of the year in successive broods, though not usually seen on the wing during January, February and March. The regular Egyptian foodplant is *Acacia nilotica*, but it has also been bred on

*Acacia farnesiana* ("futna"); very likely there are other foodplants to be observed. The pupal period in summer is but one week. This moth is apparently not merely Mediterranean but Tropical African.

(Examination of much original material, which was the basis of previous lists, has not confirmed the existence in Egypt of any other *Chlorissa* species. The so-called *C. pulmentaria* which Storey and Hayward recorded are all the *Microloxia* species mentioned below. I have not seen the actual type of *C. draudti* Andres-Seitz (*Senckenbergiana* 1923, Pl. I, fig. 19), but all specimens so identified prove to be either discoloured specimens of *faustinata* Mill. or, if genuinely brown desert moths are nothing more than *Neromia pulvereisparsa* Hamps. (syn. nov.). This last identity applies to specimens in Cairo identified as *draudti* by Andres himself. I therefore believe that Andres described these specimens and his type as a *Chlorissa* because he was incapable of understanding or recognising the structural differences given in Prout-Seitz IV between *Chlorissa* and *Neromia*, and I presume that Prout, when mentioning *C. draudti* in Seitz IV Suppt., had not actually seen a type but merely copied the description, and that the specimen, figured in Seitz IV Suppt. was not sent to him to examine. In answer to my enquiries the Senckenberg Museum have told me that the type of *draudti* cannot be found. I propose to sink this name to *pulvereisparsa* Hamps.).

**262. *Neromia pulvereisparsa* Hamps. (= *Chlorissa draudti* Andres-Seitz (syn. nov.).**

In the collection of the Ministry of Agriculture at Doqqi are four wings of this species, devoid of body and legs, pasted on card, labelled: "coll. Adair, on *Ochrodenus*, 25.v.18, Wadi Hussein" and marked, in Andres' handwriting "*Chlorissa draudti*". A larva was described by Andres-Seitz (1924) under the name *draudti* and was said to have been found on the

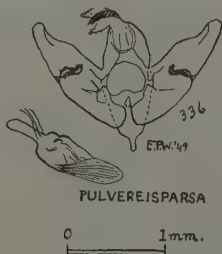


Fig. 83 : *Neromia pulvereisparsa* Hamps., ♂ genitalia, ventral open view with aedeagus separated.

same foodplant. In any case we have Adair to thank for the first record of the hitherto unknown foodplant of the widespread Saharan-Sindian Eremic moth *pulvereisparsa*, and if Andres found *draudti* on it near Helwan as he claimed, this confirms my synonymy. There is also a specimen in collection Alfieri from Sinai: 6-9.iv.40, Bir Isla, and one (E.) 30.i.30, Gebel Elba. A further specimen in the collection of the Ministry of Agriculture from El-Arish (North Sinai) is correctly identified as *pulvereisparsa*. It is more rubbed and therefore paler than the fragments marked *draudti*. The male

genitalia of this species are shewn (fig. 83). The species ranges from Egypt eastwards to South Persia and southwards to Aden.

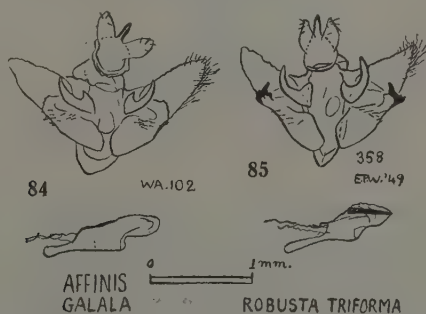
**263. *Hemidromodes affinis* Roths. (Plate IX, fig. 2).**

This species was originally described from the Hoggar Mountains, Algerian Sahara. While Prout, who received part of Hayward's Aswan material, has in Seitz IV Supplement recorded it from Egypt, other authors on Egypt have misidentified it. Hayward himself, relying on Storey's identification, recorded it as *Xenochlorodes beryllaria* Mann., which has to be deleted from the Egyptian list. The Aswan specimens are deep green (Plate IX, fig. 2) and retain this colour while other Egyptian emerald species fade more quickly. I have not seen specimens of this colour from Lower Egypt. In the four collections which I have seen, all emerald moths from the North, labelled *beryllaria*, and in fact the *Microloxia* species named below. There is however from the Eastern desert a very interesting red-brown form which I describe as follows :

larva

**264. *Hemidromodes affinis galala* subsp. nov. (Plate IX, figs. 3 and 4).**

Whitish buff heavily sprinkled with rufous. From *robusta triforma* mea red-brown forms, which it resembles, it can be distinguished by the less sandy speckly aspect, the somewhat yellower colour, the less purple and softer brown powdering, and the less strong bending of the two forewing fasciae. Also, the median area, which is darker, is perhaps less constricted



Figs. 84 and 85 : *Hemidromodes* ♂ genitalia, ventral open view with aedeagus separated: (84) *affinis galala* subsp. nov., (85) *robusta triforma* Wils.

by these fasciae. In both sexes the costa is whitish suffused. Best distinguished from *robusta* by the male genitalia, which are less sclerotised; in *robusta* the aedeagus has a long cornutus lacking in *affinis* and also the harpe bears longer and heavier hooks. See figs. 84 and 85 for these two species' genitalia.

The material is scanty but as far as it goes it seems to show that *galala* is racial, and peculiar to the Eastern Desert. If so, this red-brown form is

not analogous to that of *robusta triforma* mea (described on pages 363-364 of this Bulletin) in which race green and brown forms fly side by side.

Span : ♂, 17 mm.; ♀ 22 mm.

Holo-Type (♂), 21.vi.36, at kilom. 100, Suez Road, collection Alfieri.

Allo-Type (♀), 1.iii.26, Wadi Ascar, at foot of Southern Escarpment of North Galala plateau, in collection Alfieri.

The male genitalia enabled this form to be placed under *affinis* with certainty, for green *affinis* forms from Aswan had identical genitalia.

(*Hierochthonia debonoi* Krüger 1939 might well prove to be a synonym of *Hemidromodes affinis* Roths., typical green form).

#### 265. *Microloxia herbaria* Hubn.

This species has not been previously recorded from Egypt, but only because it was misidentified. It is fairly common on oasis ground, from the Delta southwards to Aswan (where Hayward took it but called it *Chlorissa pulmentaria*; some of his Aswan examples were also found in Cairo labelled *Xenochlorodes beryllaria* Mann., a name also to be deleted from the

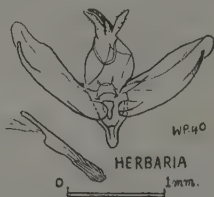


Fig. 86 : *Microloxia herbaria* Hubn., ♂ genitalia, ventral open view with aedeagus separated.

list. I presume that the Lower Egypt specimens, bred on *Pluchea dioscoridis*, etc., by Andres and recorded as flying in July and October-November, were in fact *herbaria* Hubn.. In the various Cairo collections I have found *herbaria* specimens (a) from Maadi and Aswan, labelled "*beryllaria*", (b) from Sollum and North Sinai, labelled "*Xenochlorodes cremonaria*". It is evident that Storey and his followers ignored structure and attempted to name the moths from the coloured plates of Seitz.

Prout has also recorded *Microloxia halimaria* Chrét., from Egypt. He thought this so-called species perhaps only a colour form of *herbaria*. This suspicion can now be confirmed, for topo-type *halimaria* from Algeria in the British Museum have identical male genitalia with those of *herbaria* (fig. 86). Most Egyptian specimens are normal *herbaria*; f. *halimaria* is probably confined to a few salterns in the north-west.

A specimen in coll. A.A. (18.iv.40, Wadi El-Rabaa, Gebel Katherine, south Sinai) approaches f. *advolata* Ev., a form of *herbaria* which is characteristic of Palestine, Cyprus, and the Syrian desert. In it the fasciae are bold and pale.

The foodplants mentioned by Andres for "*beryllaria*" in Upper Egypt are "*Pluchea* (= *Conyza*) *dioscoridis*, *Pituranthus tortuosus*, etc."

In the Palearctic Zone this species has a Euroriental range but it also occurs throughout Tropical Africa, also South-West (Tropical) Arabia. In many parts of the Middle East it is a true desert moth and it has certainly been taken in the desert in certain parts of Egypt, though not all parts of the Egyptian desert have suitable vegetation for it. Its wide range in Egypt is due to its also being an oasis moth.

**266. *Acidaliastis micra* Hamps. (= *Eucrostes desertoria* Rebel).**

Brown forms of this species can be referred to f. *dissimilis* Warren; there are some such from Gebel Elba, iii-iv.28 (A.A.); a whiter, more typical *micra* form is from Noucibat, East Sinai, 25.iv.24 (A.A.). The genitalia of this little moth are illustrated (fig. 87).



Fig. 87 : *Acidaliastis micra* Hamps., ♂ genitalia, ventral open view.

A Saharan Eremic moth, ranging from Arabia to Morocco.

In Petroff's catalogue i.l. is mentioned "*desertoria* Rebel" from Ikingi-Mariout, 10.xi.17, but the specimen is missing from his collection.

**Sub-Family : Sterrhinae**

For these I follow Sterneck's revision, an indispensable guide for all students. In one group, the *Sterrrha microptera* group, I am able to go further than Sterneck. My revision shows that there are six species in this group in the Egypt-Sudan-Red Sea region, and that Sterneck unfortunately misidentified *microptera* of which he could not see the type. I am fortunate in that Mr. D.S. Fletcher of the British Museum has made preparations of the genitalia of the holotypes of the little-known *microptera*



and *granulosa*, and in being able to publish herewith photos of these preparations, so that in future there need be no further confusion on the subject.

Since the first ten groups of the genus *Sterrha* (in Sterneck's arrangement) do not have Egyptian representatives at all, and he places *sordida* Roths. and *microptera* Warr. and Roths. in his eleventh group (wrongly regarding them as conspecific), my revision of the *microptera*-group follows immediately, at the top of the Sterrhinae.

This sub-family is comparatively well represented in Egypt.

**267. *Sterrha granulosa* Warren and Roths.**

This species (span : 10-12 mm.) flies in the Eastern Desert but in the material which I have seen has only been taken twice in Egypt, by Mr. A. Alfieri on 22.viii.25 in the Wadi Digla and again on 13.iv.27 in the Wadi Gharba, east of Helwan. It was originally described from the Sudan and a good enlarged coloured figure of it was given in *Nov. Zool. XII* (1905), Plate IV.

It is an Eremic species, not yet known certainly except from the Sudan and Egypt.

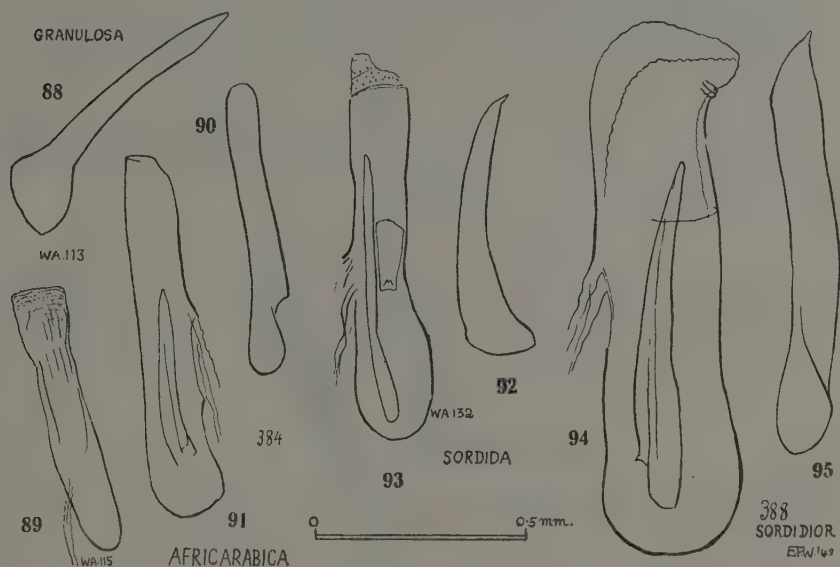
Plate VIII, figs. 7 and 8, shews the holotype (♀) genitalia from the Tring Museum. It differs from *microptera* Warr. and Roths. in having a genital plate and also in the top (distal) part of the bursa. These two species however resemble one another in having large globular pitted and sclerotised bursae, with comparatively long ductus; these characters distinguish them from others in the group.

The male antenna has long curving single cilia outstanding from almost serrate laminations. The forewing has no areole. The male hind-tibia is without spurs, the hind-tarsus being aborted. The female hind-tibia has two spurs.

The ground-colour varies according to season. The specimen taken in iv has forewing, thorax and head yellowish grey, dusted with darker grey scales, but the hindwing whiter. The specimens taken in viii are all much paler, with whitish head, thorax and forewing ground-colour. The markings are ill-defined; they consist on both wings of a wavy antemedian fascia at about 1/2, followed by a cell-spot; the more distal markings are much vaguer. The forewing also often bears traces of a wavy basal fascia. The face is blackish.

The male valve tapers to a blunt point, not produced. The aedeagus contains no cornutus but what seems to be a broad chitinous oblong plate (figs. 88 and 89). It is shorter than the valve, and this is not so in any other

of the four members of the group of which I have examined the male genitalia (viz : *sordida* Roths., *mimetes* Brandt subsp. *africarabica* mea, *sordidior*



Figs. 88 to 95 : Egyptian *Sterrha* species of the *microptera*-group: (88 and 89) *Sterrha granulosa* Warr. and Rotsh., ♂ genitalia, left valve and aedeagus respectively; (90 and 91) *Sterrha mimetes africarabica* subsp. nov., ♂ genitalia, left valve and aedeagus respectively; (92 and 93) *Sterrha sordida nili* subsp. nov., ♂ genitalia, left valve and aedeagus respectively; (94 and 95) *Sterrha sordidior* spec. nov., ♂ genitalia, aedeagus and left valve respectively.

mea, and an unidentified species from South-West Iran, with very long valves). I have not seen male genitalia of *miserrima* Turati and *microptera* Warren and Roths.

In the female genitalia (see also above) the genital (ventral) plate is sub-rectangular.

True *microptera* has not yet been taken in Egypt, and perhaps no other specimen of it, than the type exists (Plate VIII, figs. 4, 5 and 6 shows its genitalia); at any rate I am unable to show the male genitalia of true *microptera* nor describe its other male characters. A good enlarged coloured figure of the type was given in *Nov. Zool.* XII (1905), Plate IV. *Sterrha microptera* is to be deleted from the Egyptian list, though its eventual discovery in Upper Egypt is not impossible; it was not, however, among the four other Egyptian members of the group here diagnosed, two of which were from Upper Egypt.

#### 268. *Sterrha sordida nili* subsp. nov.

This is the species of the group that has been and is most often taken. It is an oasis moth and inhabits the Maadi and Cairo districts and also the delta. Probably Hayward's "*granulosa*" from Aswan is the same. There

seem to be several broods during the summer. Distribution : Eremic, only certainly known from North Africa and Palestine.

In Andres-Seitz 1924 a coloured illustration of this species was given (Plate I, figs. 15 and 16), under the name *microptera granulosa* Warr. and Roths.. This is the species which Sterneck called *microptera* in his monograph on the Sterrhinae. These errors need correction.

From both *microptera* and *granulosa* the female genitalia differ decisively. The bursa is not globular but elongated with a blunt proximal end or bottom (see fig. 96); it is heavily pitted.

17

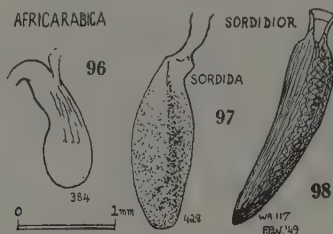


Fig. 96 to 98 : *Sterrha* ♀ genitalia, excluding ovipositor and apophyses; (96) *mimetes africarabica* subsp. nov., (97) *sordida nili* subsp. nov., and (98) *sordidior* spec. nov..

The male antenna has small bunches of long cilia arising from wart-like serrations. The forewing has no areole. In the male the hind-leg is very much aborted and without spurs, but with a long hair-tuft; in the female it bears one terminal spur to the tibia (figs. 92 and 93).

In the male genitalia, the aedeagus is longer and stouter than the valve; it contains a long slender cornutus and a small oblong chitin-plate. The valve-tip is produced in the form of a short spike.

Span : 10-12 mm.

In facies the moth resembles the preceding, but is more sprinkled with blackish-grey scales. The three fasciae are usually clearer, though the basal fascia is only distinct near the costa. The cell-spot is faint. Usually two dark lines near the termen are visible, a sub-marginal and a marginal. The fringes are partly grey. The ground colour is whitish-grey mixed with ochreous and heavily speckled with grey. The face is blackish. The Egyptian race appears to be less dark and to be clearer-marked than the typical from the descriptions, and to require the distinctive name proposed above.

Holo-Type (♂), 1.x.24, Maadi, in coll. Alfieri.

Allo-Type (♀), 7.ix.47, Maadi in coll. mea (E.P.W.).

Para-Types in coll. E.P.W., A.A., and M.A.

In Seitz IV, p. 418, appears the record of *granulosa* Warren from "Galiopolis, Egypt", a misprint for Heliopolis. The specimens, which are

not available, were probably this species, but perhaps *granulosa*, for Helio-  
polis is actually a desert locality, and many desert moths of the Eastern  
desert have been taken there in the past, together with oasis species.

The foregoing three species, *granulosa*, *sordida*, and the Sudanian *microptera*, have no areole. The next three all have an areole on the fore-  
wing.

**269. *Sterrhia miserrima* Turati**

One, ♀, vii.21, Ramleh, Alexandria (A.A.).

Span : 10.5 mm.

Also known from Tripolitania. New to Egypt.

Forewing, with areole; narrow, with rounded apex; much darker than  
the foregoing, grey, heavily freckled with darker grey; no cell-spot; post-  
median fascia, suffuse, darker; no other distinct marking. Termen rather  
darker broadly.

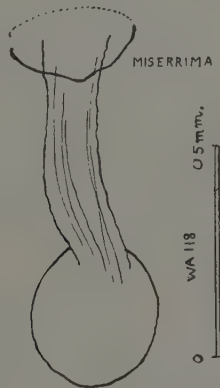


Fig. 99 : *Sterrhia miserrima* Tur., ♀ genitalia, excluding ovipositor and apophyses.

Female genitalia : bursa, small, weak, globular, transparent; ductus  
bursae, a comparatively long but weak membranous duct slightly sclerotised  
at junction with bursa; genital plate, sub-triangular, with proximal (ventral)  
angle rounded and very obtuse; anterior apophyses, very short (fig. 99).

I have not seen a male, but Mr. D.S. Fletcher tells me that the  
male genitalia of a *miserrima* para-type are characterised by the presence  
in the aedeagus of two cornuti, a long and short; in his preparation they  
cross one another to form something like a Y.

**270. *Sterrhia sordidior* spec. nov.**

This species inhabits the Tropical Red Sea shores, both in South-West  
Arabia and South-East Egypt (Gebel Elba region). There is a series in collec-  
tion Alfieri taken in iii, iv.28.

Male hind-leg, tibia without spurs, tarsus quite aborted. Face, blackish. Palp, very short. Male antenna, segments even, with long cilia. Forewing, with areole, pale grey, speckled with darker grey; cell-spots clearly visible on both wings. Postmedian fascia, clearly marked, paler-edged distally. A fainter submarginal fascia is often present also. Underside, greyish, marked as on upper side but more faintly. Wing-shape, not sexually different.

Span : 13-15 mm.

Female genitalia : bursa, strong, heavily wrinkled longitudinally, elongate, tapering to a blunt point at the proximal end (bottom); ductus bursae, shaped like a bottle-neck, comparatively short, cut away ventrally (see fig. 98).

Male genitalia, the largest of the group; aedeagus longer and very much stouter than valve, containing a strong cornutus; valve, produced at the tip in a spike like that of *sordida* Roths.; the valve however is nearly twice as long as in that species, and of more uniform thickness throughout (see figs. 94 and 95).

Holo-Type (♀), Allo-Type (♂) (Prep. WA. 117), both iii.28, Gebel Elba, in coll. Alfieri.

Para-Types : ♂♂ and ♀♀, same data as holotype and allotype, also two ♂♀ (Prep. 388), 8.xii.44, Buraiman, coastal plain near Jeddah, South-West Arabia (leg. A.R. Waterston), presented by Anti-Locust Research Centre to British Museum, and collection mea.

## 271. *Sterrha mimetes africarabica* subsp. nov.

This subspecies also seems, in the Red Sea region, to be confined to Tropical latitudes; however, the typical South Persian *mimetes* lives North of the Tropic. Probably Saharan-Sindian.

The race *africarabica* differs from *mimetes* as described by Brandt in several particulars: *mimetes* has three clearly-marked forewing fasciae, and more spurs on the hind-tibiae of the ♀. Mr. D.S. Fletcher has however examined the genitalia of both sexes of South Persian examples, sent to the British Museum by Brandt as para-types of *mimetes*, and the differences between these genitalia and the genitalia of *africarabica* are slight and of not more than subspecific worth. The possibility remains that Brandt's original series contained two species, and that these para-types are different from the holo-type of *mimetes*. If this should prove to be a fact, then the name *africarabica* will acquire specific worth, and it will be necessary to add the species *africarabica* to the Persian list, as a moth flying together with the true *mimetes*. At present however it seems best to assume that the para-types of *mimetes* are in fact that species and to describe *africarabica* as a subspecies, as follows :



Face, blackish. Palp, very short. Male antenna, segments separated from one another by narrow necks; long cilia along each segment. Male hind-leg, shortened, tibia without spurs, tarsus aborted; female mid-tibia and hind-tibia, each with only one terminal spur (Brandt describes *mimetes* female hind-tibia as having two spurs).

Forewing, with areole, pale grey, speckled with darker grey, without cell-spot; ante-median and post-median fasciae, clear. Termen, pale, sometimes with dark specks on the nervures at the base of the fringes which are paler basad, darker distally. The ♂ forewing is rounder, that of the ♀ more elongated.

Span : 11-13 mm.

♂ genitalia, comparatively small, but with aedeagus longer and stouter than the valve; it contains a stout cornutus. The valve is rounded and does not taper (figs. 90 and 91).

♀ genitalia, bursa with top (distal end) produced in a chitined curved neck posterior to the entry of the ductus bursae; upper (distal) part of the bursa wrinkled longitudinally, proximal part, not tapering. It differs from the *mimetes* para-types only in lacking the minute spines which, in that race, line the interior wall of the bursa (fig. 96).

Holo-Type (♀), Allo-Type (♂), both 27.iii.48, coastal plain (Tahama), Asir, South-West Arabia (leg. B.P. Uvarov and A.P. Waterston). Prep. 384. (At present in coll. m.; one will be presented to the British Museum).

Para-Types (♂♂ and ♀♀), iii. and iv.28, Gebel Elba (coll. Alfieri), (Prep. W.A. 114).

## 272. *Sterrhia mareotica* Draudt.

Flies in successive generations in the Mariout and around Alexandria. Also two, 22.v.35, leg. Rabinovitch, El Arish (North-East Sinai) (A.A.). An East Mediterranean species, now known also from Palestine.

The early stages were described in Andres-Seitz (1924); the remarks there, however, regarding the affinity of this species to *Sterrhia seriata* and *albitorquata* are to be ignored, being based on superficial appearance; a structural study of these three species shews they are not close to one another.

An interesting and hitherto mistaken variety of *mareotica* requires description as follows :

### 272 a. *Sterrhia mareotica fusca* ab. nov.

The pale whitish grey ground colour of the typical form is completely replaced by a uniform smoky grey speckled suffusion; the usual fasciae are

almost invisible. The cell-spots are also faint, but the termen, as in the typical form, is a black interrupted line. Fringes, concolorous, smoky grey. Underside, concolorous.

Holo-Type (♂) (Prep. WA. 129), 29.xi.19, Atf, near Alexandria (A.A.). This example was sent to Joannis who finally opined that it was a variety of the Central Asian *descitaria* Chr. An examination however of its genitalia has enabled me to assign it correctly.

**273. *Sterrha elongaria* Ramb.**

Not hitherto recorded from Egypt. An Euroriental species. A long series (P.) from Ikingi-Mariout, in every month from iv to ix, was misidentified *mareotica* by Petroff, who also misidentified *mareotica* as *longaria* H.-S.

**274. *Sterrha epaphrodita eremita* subsp. nov.**

This species is also new to Egypt. There are three examples (Prep. WA. 130) (A.A.) taken in the Eastern desert in mid-summer. The typical form was taken in the same month at Jerusalem, but is yellower, larger and more clearly banded. This new desert form is much paler, being in two specimens monotonous whitish except for the intensely black cell-spots on both wings and a very sparse and irregular scattering of black scales over the basal half of the wings. In a third specimen, obsolete banding on the forewing is discernible. The termen is not black-spotted, and this is a good superficial criterion for distinguishing examples of *eremita* from small pale examples of *Scopula adelpharia pharaonis* (below).

Holo-Type, Allo-Type, and Para-Type, 22.viii.25, Wadi Digla (A.A.).

**275. *Sterrha inquinata* Scop. (= *herbariata* auctt.).**

This species is apparently the only Geometrid infesting stored products. The genitalia are illustrated in Corbet and Tams (1943); a good plate is also given there of the moth. It is widespread in Upper Egypt, being both an urban and a rural moth. It also occurs in the South Sinai and Gebel Elba mountains (A.A.). A large female from Ain Musa, South Sinai, is marked "*Ptychopoda musaica* sp.n., det. Andres-Seitz" but this appears to be a nomen nudum; probably Seitz discovered in time that Andres was about to create a synonym and suppressed the description. It has been bred from dried specimens of "wild carrot" in the Ministry of Agriculture's herbarium. It is of course polyphagous. Euroriental.

**276. *Sterrha hathor* spec. nov. (Plate IX, figs. 5 and 6).**

Very similar to small well-marked specimens of *Brachyglossina williamsi* (No. 28) below) but distinguished therefrom by having a tongue and by the genitalia, which I only know in the female sex (fig. 100).

It was taken together with *Glossotrophia chalcographata sinaica* (No. 291 below) from which its lack of a circum-apical black termen distinguish it at a first glance.

♀ antenna, with short cilia. Palps (missing in holo-type) very short. Tongue, present. Face, dark. Scale-fringe on head, yellowish white. Hind-tibia (♀) with a pair of terminal spurs.

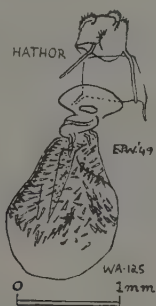


Fig. 100 : *Sterrha hathor* spec. nov., ♀ genitalia.

Forewing, narrow with rounded apex; costa, convex, curving at about  $1/2$ ; sandy-ochreous grey, with more or less heavy grey markings : broad costal shades at  $1/3$  and  $2/3$ ; ante-median and post-median fasciae therefrom, finer, interrupted. Cell-spot, heavy, elongate, at right angles to costa. Median shade, from cell-spot to hindmargin. Wavy submarginal shade, separated from terminal shade by a pale irregular submarginal line. Termen, unmarked. Fringes, paler ochreous grey.

Hindwing, similarly coloured, cell-spot finer. Ante-median fascia, diffuse towards anal margin; postmedian fascia, confused with submarginal shade which is, as on forewing, separated from the terminal shade.

Female genitalia : a chitinised ridge, in the heavily sclerotised, pear-shaped bursa, is somewhat like that of *Sterrha dilutaria holosericata* (see Pierce, 1914) but the ostium is distinctive in form. The bursa is copiously spinose, except proximally (at the bottom). A strong plate covers the ostium and is different in form from other species known to me (see fig. 100).

On account of these female characters I introduce this new species in the same group as *inquinata* Scop. and *dilutaria* Hubn. (Sterneck's Group XIV), but a study of the male characters, when known, may necessitate a change.

Span : 17-18 mm.

Holo-Type (♀) (prep. WA. 125), 10.iv.40, Wadi Isla, Karm Alam, 680 m. (A.A.).

Para-Type (♀), 13.iv.40, Wadi Isla, Bir Tarfa, 1430 m. (A.A.). Both South Sinai.

The name *hathor* is that of the moon-deity, whose cult in Sinai is the most ancient of that region.

In Rebel's manuscript is mentioned a species, determined by Zerny as *unicarata* Prout; 4.iii.35, Wadi Firan, Sinai. Probably the specimen is in fact an example of *hathor* sp.n., which somewhat resembles *unicarata*. The *hathor* ♀ genitalia are, however, not anything like those of that species, and the following differences in facies between the two may be useful: both forewing fasciae are softer and more obscure in *hathor*, the postmedian fascia is also less acutely angled outside the cell; *hathor* is distinctly longer-winged.

*Sterrha longaria* H.-S. is mentioned by Prout-Seitz IV. Suppt., p. 58, for Egypt. Neither Rebel nor I have seen an Egyptian example thereof nor of *sublongaria* Stgr. Sternneck's opinion, based on the genitalia, is that *sublongaria* Stgr., the East Mediterranean « vicariant » of the West Mediterranean *longaria* H.-S., is conspecific (Sternneck's Group XV). Perhaps *mareotica* has been mistaken for it. The question of the occurrence of *longaria* remains open.

*Sterrha libycata* Bart. was recorded by Storey from Maadi; the record was followed by Andres-Seitz 1924; but the examples so determined by Andres are in fact in part *Glossotrophia alfieri* spec. nov. (no. 292 below) and in part *St. inquinata* (no. 275 above). It also appears from old correspondence that Storey regarded a specimen of *St. inquinata* Scop. as *libycata*, on the grounds of a fancied resemblance between it and the figure of *libycata* in Seitz IV but Prout corrected his determination. The El Qantara example (30.viii.16) (M.) is still to be seen and is now identified as *inquinata* = *herbariata*. The name *libycata* is to be deleted.

#### 277. *Sterrha fathmaria* Ob.

In Rebel's manuscript I find mentioned the receipt of three examples of this species, 24.i.33, Wadi Canisrob (leg. Priesner). He says that they only differ from typical Algerian specimens by being slightly smaller and having a rather longer wing-shape; span 14 mm, whereas in the typical *fathmaria* the span is 16 mm.

The collections in Cairo do not contain any species answering to this description but I am inclined to accept the record. North African Eremic.

#### 278. *Sterrha dimidiata subsaturata* Guen.

Recorded doubtfully by Andres-Seitz (1924). I have seen no specimen, but have taken this form of *dimidiata* in Cyprus, thus confirming its occurrence in the East Mediterranean. See also Seitz IV Suppt., p. 225, for its discovery on the dunes of Palestine. Its occurrence in Egypt requires confirmation but it by no means unlikely, in the Mariout or Northern Sinai. Euroriental.

#### 279. *Sterrha fractilineata* Zell.

Flies in most months of the year, in the Mariout and Alexandria districts, the Delta, the Cairo and Maadi districts, and southwards to Aswan. Varies seasonally in size. Mediterranean.

#### 280. *Sterrha ruficostata* Zell. (= *incarnaria* H.-S.).

Not very common. One, 12.ix.22, Sidi-Gaber (near Alexandria) (A.A.);

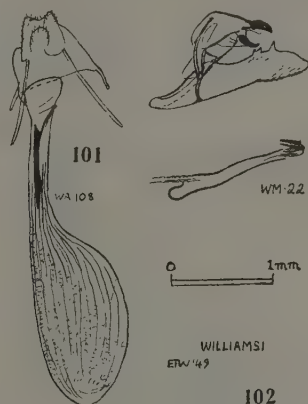
one. 4.x.12, Alexandrie (P.); and a short series ii, iii and iv.16 and 17 (leg. Gough and Storey), Maadi (M.). Mediterranean.

**281. *Sterrhia sanctaria* Stgr.**

One, 24.iv.40, Wadi el Rabaa, South Sinai (E.). Two, 31.iii.24, El Migreh, North-East Sinai (A.A.). An Eremic species distributed from South Persia westwards across the Sahara. A desert moth.

**282. *Brachyglossina williamsi* spec. nov. (Plate IX, figs. 7, 8 and 9).**

The holo-type was determined by Joannis as *cervantaria* Mill.. It certainly superficially resembles *cervantaria* subsp. *depressaria* Stgr., from Algeria. It differs from these structurally (tonguelessness, male genitalia).



Figs. 101 and 102 : *Brachyglossina williamsi* spec. nov., genitalia, (101) ♀, (102) ♂, lateral view, with right valve omitted and aedeagus separated.

♂ antenna, with long cilia and coarse scales but segments not prominent. ♂ hind-tarsus, short.

Face, chocolate-brown, darker than rest of body and wings. Tongue, absent.

Forewing, sandy ochreous grey, sometimes nearly white. In the whiter form, the fine grey-brown cell spot is conspicuous. In the darker form, the markings are very indistinct. Ante-median fascia, visible only near costa, and indicated by a brown spot on nervure 1. Post-median fascia, a fine oblique brown line at costa, obsolete shortly thereafter. Submarginal line, pale, wavy, hardly visible. Fringes, yellowish grey or whitish.

Hindwing, similarly coloured, with cell-spot distinct; post-median and sometimes ante-median fascia, fine, clear towards anal margin, other markings very vague. Fringes, concolorous.

Span : 18 mm.



♂ genitalia : aedeagus, slender, with three small distal cornuti; valve with two costal projections (fig. 102).

♀ genitalia : large but rather lightly sclerotised; ostium bursa, trumpet-shaped; ductus bursae, long; bursa, pear-shaped, extensively armed with short light internal spines, and wrinkled longitudinally (fig. 101).

Holo-Type (♂) (Prep. WA. 108), 19.iv.23, Wadi Gerrawi, Eastern Desert (A.A.).

Allo-Type (♀) (Prep. WA. 108), 26.iii.35, Wadi Rishrash, Eastern Desert (A.A.).

Para-Type (♂) (Prep. WM. 22), 25.iii.24 (leg. C.B. Williams), Mahatta Maskara, Eastern Desert (coll. M.).

### 283. *Tineigidia aegyptiaca* spec. nov.

The second known member of a genus recently founded on a small Sterrhine moth from Palestine, from which this species differs principally in male genitalia.

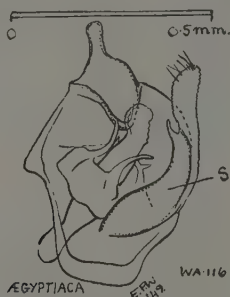


Fig. 103 : *Tineigidia aegyptiaca* spec. nov., ♂ genitalia, with left valve removed (S = sacculus).

♂ antenna, stout, pubescent. Tongue, present. Palp, short, finely pointed. Hind-tarsus, very short.

Forewing, elongated, rounded at apex, whitish ochreous, faintly powdered with grey; a faint blackish postmedian fascia acutely angled opposite the cell; termen greyish; fringe, whitish. Hindwing, with fainter fascia and similar termen to forewing. Underside, forewing fascia, fainter; termen on both wings, grey.

♂ genitalia : the extension of the sacculus is shorter, less "needle-like" than in *eremica* Stern. and Ams. (fig. 103).

Span : 13 mm.

Holo-Type (♂) (Prep. WA. 116), 13.iv.27, Wadi Gharba, Eastern Desert (in coll. Alfieri).

**284. *Oar pratana* F.**

Inhabits the Mariout and the vicinity of Alexandria; also known from Deirout (Delta) (A.A.) and Wadi El-Ghedeirat (Sinai) (A.A.). There are examples taken in all months from v to xii. Its biology was briefly described in Andres-Seitz 1924. Eremic, ranging from Arabia to Spain. A desert moth.

**285. *Scopula donovani* Dist.**

Inhabits the Alexandria vicinity, the Delta, and the Cairo vicinity, flying in successive broods almost throughout the year. Tropical African. An oasis moth.

**286. *Scopula flaccata languidata* Pr.**

New to Egypt. One only, taken in 1916 at Hammam (Mariout) (M.). Ranges from Algeria to Palestine.

**287. *Scopula andresi* Draudt.**

No further specimens have been taken of this species which Andres bred from larvae found on *Pluchea* in the Delta. I have not seen a specimen. ? Endemic. An oasis moth.

**288. *Scopula coenosaria luridata* Zell.**

Inhabits the Alexandria vicinity, the Delta, the Nile valley oasis around Cairo, and the Eastern desert from the Mokattam hills to the Gebel Elba. Variable in coloration, some of the darkest grey specimens coming from the extreme South-East of the country. Has been bred in Cairo on rose (A.A.) but is of course polyphagous on low-plants also. Ranges from the shores of the Eastern Mediterranean (Greece) into Central Asia and southwards into Tropical Arabia, perhaps further. ? East Mediterranean.

**289. *Scopula adelpharia pharaonis* Sterneck.**

Varies in size but is more constant in markings. An oasis species, commonest around Cairo, also from the Delta. Multivoltine, iii to ix. East Mediterranean.

**290. *Scopula ochroleucaria* H.-S.**

Occurs on oasis ground from North to South (Alexandria and Ikingi to Aswan) flying in nearly every month of the year in repeated broods. A strongly-marked dark grey form, ab. *serrans* Prout, occurs among the more numerous paler forms.

Prout-Seitz regards it as a Mediterranean subspecies of *minorata* H.-S. (Tropical Africa); and Storey actually first recorded it from Egypt

under that name. It is perhaps premature however to use this name to denote the species, for a revision of the Tropical forms in the *minorata* group, based on genitalia, will probably produce some surprises. The Egyptian species seems to be genuinely the same as the Mediterranean; at least there are no differences in the male genitalia between examples from Egypt and Cyprus.

**291. *Glossotrophia chalcographata sinaica* Rebel (Plate IX, figs. 10 and 11).**

This race (described by Rebel posthumously in 1948 as a new species) agrees structurally ( $\sigma$  genitalia and hind-tibia) with Brandt's species described in 1938 from South Persia and must be considered a race if not actually a synonym thereof. It is exceedingly variable in size and coloration, some specimens resembling *Glossotrophia asellaria* superficially. On the whole the average form is less whitish than the typical Iranian race, and the termen is stronger-marked. The male genitalia are illustrated in fig. , page of this volume, in another article.

Is commonest in the mountains of South Sinai, where it has been taken in iv and vii (E.) (A.A.); there is also an example leg. Rabinovitch, 23.v.35, El Kosseima (North Sinai) (A.A.).

A single male from Maadi, 5.vi.16 (A.A.) (Prep. WA. 123), may be placed under this name with a query; it is the only one from west of the Gulf of Suez, and furthermore the cerata-arms are symmetrical, as in *Glossotrophia rufomixtata* Ramb. (Spain), but the proximal projection of the base of the cerata is not as in that species, as described and illustrated by Sterneck, but as in *chalcographata* and *sinaica*. This specimen is probably either an individual variation, or a local form of structure; it cannot be described on so scanty a basis, and perhaps is hardly likely ever to deserve a separate name.

These specimens were in part previously determined as "*Acidalia coenosaria* Led." (No. 288 above).

The species might be classified as Eastern Eremic or Anatolian-Iranian. Bivoltine, perhaps multivoltine.

**292. *Glossotrophia alfierii* spec. nov. (Plate IX, figs. 12 and 13).**

This new species varies in size incredibly and the smallest (midsummer) specimens are easily confused with the small desertic *Sterrhæ*; they have also been confused with a series of *adelpharia* (No. 289 above) though not flying together with it. The genitalia have shewn that these small specimens are conspecific with the larger somewhat darker forms flying in the same desert valleys in the cooler months.

$\sigma$  antenna, with long copious cilia.

♂ hindleg, with a single terminal spur on the tibia, and a comparatively long tarsus; ♀ hind tibia with a pair of terminal spurs.

Palp, shorter than eye-diameter; face, pale. Tongue, long.

Forewing :

(1) large winter brood : sandy yellowish, with faint greyish somewhat diffuse fasciae running from the costa. Cell-spot, also faint, grey-brown, somewhat diffuse, variable. Marginal shade, diffuse, greyish. Termen, a fine blackish line, broken except at the apex round which it runs as in all

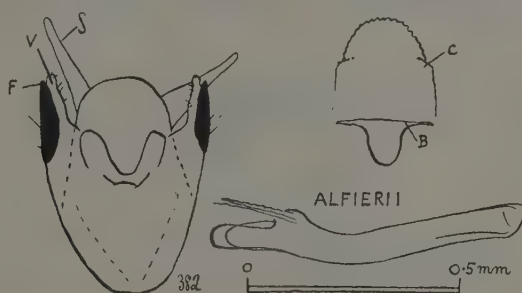


Fig. 104 : *Glossotrophia alfieri* spec. nov., ♂ genitalia, with aedeagus removed, showing 8th sternite (S = socius, V = Valve, F = fibula, C = point of 8th sternite whence cerata would spring, if developed, B = base).

*Glossotrophia* species. Hindwing rather paler than forewing, except the fringes which are somewhat darker yellowish than the ground-colour of the rest of the hindwing.

Span : 17-22 mm.

(2) small summer brood : whiter, markings more orange-yellow than grey; forewing cell-spots, diffuse brown-gold; forewing termen, brown between the nervures, darkest near apex. Fringes, ochreous. Under magnification a few black scales scattered over both wings are discernible, but not so many as in *Scopula adelpharia pharaonis* (No. 289 above).

Span : 14-15 mm.

Male genitalia (fig. 104) : fibula less blunt than in other *Glossotrophia*, thereby slightly approaching *Scopula* subgenus *Ustocidalia* Sterneck. Socii widely separated (the ♀ hindleg and long tongue confirm that this is a *Glossotrophia* not a *Scopula*). Cerata, quite undeveloped; base of cerata with a proximal rounded central projection, missing in Prep. WA. 121 (probably fractured).

Holo-Type (♂), Allo-Type (♀), 23.viii.25, Wadi Digla, Eastern Desert (A.A.).

Para-Types ( $\sigma$ ) (Prep. 382), same date and place (in coll. m.);  $\sigma$  (Prep. WA. 121), 25.iii.25, Wadi Zohleiga, Eastern Desert (coll. A. Alfieri);  $\sigma$  (Prep. WM. 22), 14.xi.23, Mahatta Maskara, Eastern Desert; two,  $\sigma$  and  $\varnothing$ , 12.xii.23 (leg. Adair), Wadi Digla; one, 5.v.18, Wadi Rashid, Eastern Desert (leg. Adair) (in coll. Ministry of Agriculture).

**293. *Chlorerythra rubriplaga sinaica* subsp. nov. (Plate IX, fig. 14).**

Differs from the typical African form by the stronger fascia and the absence of any green coloration, and from the ab. *rufa* by the brown rather than pink colouring.



Fig. 105 : *Chlorerythra rubriplaga sinaica* subsp. nov.,  $\sigma$  genitalia, ventral view, with right valve forced open to shew inner aspect.

Face, red-brown, deepening towards antennae, between which an olive-white undulating scale-fringe runs horizontally.

Palp, with some deep brown scales.

Forewing, light brown, with a slightly curved sub-apical deep brown streak white-edged distally, not reaching apex but touching hind-margin. If produced it would reach costa, not apex. Fringes, light pinkish-brown.

Hindwing, whitish brown, darker at anal angle; fringes, paler pink.

Underside, forewing, whitish, pale-brown-suffused on costa, and on outer margin; hindwing, whitish.

Male genitalia (fig. 105) : uncus and socii replaced by two small hairy chitined pads; aedeagus very small; anellus lobes, produced; valves with bulging scobinate sacculus, short and rounded. I am indebted to Mr. D.S. Fletcher for making a preparation of the typical African form and a comparison with this new form, which enables me to ascertain the specific identity. He tells me that there are similar brown forms from Arabia in the British Museum. It is a Tropical African species.

Holo-Type ( $\sigma$ ) (Prep. W.A. 120), 6.iv.24, "sandy plain near Gebel Lebas, North-East Sinai" (A.A.).

Allo-Type ( $\varnothing$ ), 24.iv.40, Wadi El-Rabaa, South Sinai (E.).

**294. *Cosymbia pupillaria* H.S.**

One  $\sigma$ , 29.viii.27, Sidi-Gaber (Ramleh) (Prep. WA. 133) (A.A.). Also one ab. *badiaria* Stgr., 4.viii.19, Alexandria (P.), which though correctly



labelled was entered in Petroff's catalogue (following Andres-Seitz) as *ruficiliaria* H.-S. This is a misidentification, and that name must be deleted. The fact that the foodplant recorded by Andres was *Myrtus* should have been a hint to Andres-Seitz that the species was not the oak-feeding *ruficiliaria*; there are no oaks in Egypt.

The species is a Mediterranean maquis moth, and outside Egypt not only eats *Myrtus* but other low shrubs of the maquis. It is also somewhat migratory, and occasionally reaches the south coast of England.

**295. *Traminda rufistrigata* Hampson (= *Cosymbia elbaensis* Rebel 1948, nov. syn.) (Plate IX, fig. 16).**

The pale (summer forms) are f. *marcida* Warren (described as a *Cosymbia*); the stronger-marked winter forms described as a new species by Rebel are indistinguishable from typical *rufistrigata*, a Sudanian-Deccanian or Tropical Eremic species. It is common in the Gebel Elba region, and also inhabits Sinai.

**296. *Traminda graciliata* Rebel 1948 (Plate IX, fig. 15).**

A female, corresponding to this description, and labelled i.33, Wadi Aideb, Gebel Elba (M.), is illustrated herewith. This is perhaps a good new species, of the Tropical fauna.

**297. *Pseudosterrha paullula philaearia* Brabant (= *gayneri* Roths.).**

The only known example from Egypt of this Sudanian-Deccanian moth, is the single ♀ type of Brabant's *philaearia* 1896, which is perhaps a synonym of *ochrea* Warren 1888. Brabant's name is earlier than Rothschild's. It was taken on the isle of Philae, near Aswan; its habitat has since been submerged annually by the Aswan reservoir, but it may be rediscovered near Aswan or in the Gebel Elba region eventually. I have not seen an Egyptian example, though familiar with Arabian examples.

The last three species seem to be transitional to the next sub-family.

**Sub-family Larentiinae**

**298. *Rhodometra sacraria* L.**

Inhabits both the desert and oasis in Upper and Lower Egypt; its migratory habits make it liable to be found, though doubtless not breeding, everywhere. Its phenology is multivoltine.

Foodplants : *Beta*, *Polygonum*, and doubtless other low plants; in coll. A.A. is an example reared from "hemaid," a herb which I have not been able to identify. The species is very widespread in the Tropics and Subtropics, and migrates far north into cool Temperate latitudes in favourable seasons.

/is

**299. *Rhodometra antophilaria* Hübner.**

Three : ♂ (Prep. WM. 20), v.33, Wadi Assiuti, Upper Egypt (Eastern Desert) (M.); ♂, 15.iii.-end iv.28, Gebel Elba (A.A.); ♀, 23.v.35, El-Arish (North Sinai) (A.A.). Evidently rarer than the preceding species, but equally widespread in Egypt, except that there are no examples from the Mariout or the Delta. Andres-Seitz mention Bercash (15 miles north-west of Cairo) and the desert valleys near Helwan. Presumably this species is also a migrant.

Range : (?) Euroriental.

(It differs from *sacraría* not merely in forewing pattern (the fascia reaches the costa well before the apex), but also in the male genitalia (the uncus is narrower and weaker, the valve longer, and the aedeagus lacks the distal angular plate of *sacraría* and contains a single and very small thorn-like cornutus)).

Since the writings of Turati and Prout in Seitz leave open the question of whether the North African forms are distinct from *antophilaria* and from each other (there being no question, of course, of their distinctness from *sacraría* L.), I have not only briefly described above the male genitalia of the Egyptian *antophilaria* form but add the following additional notes on its facies : the forewing is yellow with a straight reddish band; the hindwing is pure white. All three Egyptian specimens thus have a forewing typical of *antophilaria* but hindwing and underside agree with *intermedia* Turati (*Atti Soc. Ital. Sci. Nat.* LXIX, 1930). I can hardly believe that *intermedia* Turati is separate from *antophilaria*.

**300. *Lithostege* ? *cinerata* Tur.**

It has not proved possible from a genitalia examination to decide whether in fact, as seems probable, the *Lithostege* species inhabiting the Mariout, and reported under the name *farinata* Hufn. by Andres-Seitz (1924), is *cinerata* Turati, the Cyrenaican representative of the *farinata* group. In collection Petroff, the only collection containing specimens of this group, Egyptian, Palestinian and Bulgarian specimens of the group are all mixed together without labels. The male genitalia of three specimens examined were true *farinata* but these were probably Balkan specimens. A number of females were not examined for comparison, since the distinguishing female characters have not yet become known.

The species is vernal and univoltine; the foodplant is doubtless a steppe crucifera.

**301. *Lithostege fissurata* Mab.**

Several ♀♀, 16.i.33, Wadi Garara, near Gebel Elba (M.).  
North African Eremic. A desert moth.

**302. *Cidaria obstipata* F.**

This migratory multivoltine moth occurs almost everywhere in Egypt and in nearly every month of the year. It is polyphagous on low plants. A ♀ from Deirout (M.) was inexplicably labelled "*Chloroclystis rectangulata*" and is apparently the specimen responsible for the record in Andres-Seitz 1925, page 60, of that species. No other examples of *C. rectangulata* are known from Egypt and the name is to be deleted. *C. obstipata* has an almost world-wide range.

**303. *Perizoma poliosana* Rebel 1948**

I have found nothing corresponding to this description from a single ♀ from Wadi Canisrob, Gebel Elba region.

**304. *Eupithecia centaureata* Schiff (= *oblongata* Thunb.).**

Boyd's examples (29.xi.16, El-Romani, North Sinai), and some examples from Maadi, south-east of Cairo, taken in xi.13, remain the only Egyptian examples to hand of this Eurooriental moth (A.A. and M.).

**305. *Eupithecia aegyptiaca* Dietze.**

Not retaken since the original description; quite unknown to me. Apparently a rare endemic species, perhaps an error!

**306. *Eupithecia unedonata* Mab.**

Apparently bivoltine, flying in iii-iv and again in xi. It inhabits oasis ground around Cairo (Maadi, Giza) and also Northern and Southern Sinai. Mediterranean.

**307. *Eupithecia tenellata deserticola* Turati.**

New to Egypt. Inhabits Sinai and the South-Eastern desert of Egypt, being only represented by two ♀♀ (A.A.): 1.iii.28, Wadi Gald El-Agouz, and iv.40, Wadi Isla, Bir Tarfa.

Eremic, North Africa to Arabia.

**308. *Eupithecia ultimaria* Boisd.**

Rather variable, common wherever tamarisks are well established. Boyd's so-called "*venosata* F." from El-Romani (North Sinai) is nothing but this species, and the name *venosata* is to be deleted. It has been bred from tamarisks in Maadi and the Fayoum (E.P.W.). There is material (A.A.) from Bahariya Oasis and Ramleh, near Alexandria; also (M.) from Maadi.

Multivoltine. Pan-Eremic.

Foodplant: only *Tamarix*.

**309. *Gymnoscelis pumilata* Hübner.**

Common throughout the year from the Mariout and Alexandria to Cairo.

Multivoltine. Euroriental. Polyphagous, especially on flowers. Occurs in the desert but is commonest in oases.

**Sub-family : Geometrinae****310. *Macaria aestimaria* Hübner.**

Flies from May to October, in successive broods, in the Mariout, near Alexandria, in the Delta, near Cairo, and doubtless elsewhere in Egypt where its foodplant (*Tamarix*) grows.

A Pan-Eremic oasis species, also penetrating the Mediterranean, and reaching South-Western Arabia (Tropical Arabia). The range might even be described as Euroriental, if we ignore the biology of the moth and the Eremic character of its foodplant.

**311. *Coenina dentataria* Swinh.**

Very variable seasonally, being larger and darker in the cooler months, smaller and paler in the summer; this tendency is to be observed in many multivoltine moths, e.g. (141) *viscosa* and (292) *alfierii*, above. Inhabits oasis ground around Cairo.

Foodplant : *Acacia nilotica*.

A Red-Sea Eremic species, ranging from Abyssinia through Arabia and Egypt to Palestine. The early stages have been described by Andres.

**312. *Phaselia* (?) *serrularia* Ev.**

I have not investigated the structural differences between the various *Phaselia* forms. The Egyptian form resembles *serrularia* Ev. (nec. Led.) as described and figured in Seitz IV. It is larger than and does not agree with the accounts of *deliciosaria* Led. (described from Spain and also reported from Palestine). *P. relicta* Turati 1930 (*Atti. Soc. Ital. Sci. Nat.*, vol. LXIX, Pl. II) also resembles the Egyptian form; indeed one wonders whether there is a specific difference between it and *serrularia*; *relicta* Tur. would appear to differ from the Egyptian form only in being paler and less strongly marked. The only Egyptian specimen is from North Sinai, 25.v.35, El-Kosseima, leg. Rabinovitch (A.A.).

An Eremic species whose geographical status cannot be more exactly stated pending a revision of the genus.

**313. *Mannia fatimaria* B.-Haas.**

Hitherto misidentified as *Tephronia cremiaria* Freyer. Andres-Seitz 1924 apparently blindly followed Storey who, evidently prefer-

ring the misleading coloured plates of Seitz, to the accurate and helpful text of Prout in Seitz, placed the Egyptian species in the wrong genus.

There is a long series (M.) from Maadi, mostly leg. Gough; also one from Helwan (E.). An old specimen was also said to have been taken by Andres in the Wadi Hof. One wonders whether it really taken there, it was not perhaps a wanderer from oasis-ground. Its biology in Egypt has not been ascertained. The genus, as a whole, feeds on tree-lichens, and the larvae can be obtained by beating branches of old trees which are shaggy with lichen. The Wadi Hof is desert ground and presumably has only rock-lichens representing the algae; it harbours one or two rock-lichen-feeding moths (e.g. No. 137, see Part I, and No. 138a, *Bryoleuca minima* sp.n.), but it would be surprising if a *Mannia* fed on these. Maadi, on the other hand, where most specimens have been taken, has many well-grown fruit and other trees (irrigated). Apparently univoltine, vernal. The species is also known from North-West Africa. The genus is Palearctic.

#### 314. *Gnophos mucidarius* Hübner.

Only in the Mariout, where it flies mostly in ix-xii, but also occasionally in ii.

The male genitalia agree perfectly with those of subsp. *ochracearius* Stgr. (North-West Africa and Spain and Portugal) and almost perfectly with those of typical *mucidarius* (South France). Many individuals of the Mariout race are much whiter than *ochracearius*, doubtless in relation to the very white sands of the habitat, but until the specific relationship of *recticostarius* Turati has been determined by an examination of its genitalia, it seems preferable not to propose a new name for the Egyptian race, for which Turati's name might possibly be used.

Apparently bivoltine.

Food plant in Western Europe: *Linaria*.

A Mediterranean species.

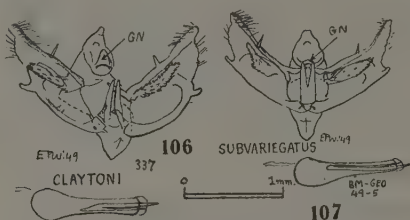
#### 315. *Gnophos subvariegatus claytoni* subsp. nov.

The most important difference between this form and typical *subvariegatus* (from Jerusalem) is structural (see below). As a whole, the Egyptian form seems larger and stronger, both in structure and markings, than the Palestinian, of which I have, however, only examined one specimen. The facies is sandy ochreous, with variably strong greyish markings, these in the allo-type are so extensive as to leave pale only a small basal patch and a narrow band outside the postmedian fascia. Cell-spot, ring-shaped, but grey-suffused. Denticulations of fasciae on nervures, darker grey-brown, two on the ante-median fascia and four on the post-median fascia, of the fore-



wing. In one para-type ♂, the entire fasciae are dark grey (Plate IX, fig. 18). Fringes, pale. Underside, with heavy grey submarginal band, interrupted in ♂, complete in ♀. In the ♀, the grey suffusion is extended inside the postmedian line which appears pale and narrow.

Compared with the plate of *G. libiputarius* Turati (a distinctly smaller species) *claytoni* has the two fasciae closer together at the hind margin of the forewing. *G. culminans* Turati not only differs in having pectinated antennae, but in the course of the postmedian fascia. The ♂ antenna of *claytoni*, is, of course, as in *subvariegatus*, i.e. serrate-ciliate, the serrations being prominent and blunt.



Figs. 106 and 107 : *Gnophos subvariegatus* Stgr., ♂ genitalia, ventral view with aedeagus separated; (106) *claytoni* subsp. nov., (107) typical *subvariegatus* (Jerusalem), (GN=gnathos).

From topotypical *subvariegatus* Stgr., *claytoni* male genitalia differ slightly : the gnathos is extended distally into a tongue-shaped flap, while in *subvariegatus* it is band-shaped (see figs. 106 and 107). This peculiarity of the gnathos is the same in both the Sinai and the Eastern desert *claytoni* males. Furthermore, the field of spines on the interior of the valve is rather heavier in *claytoni*. I doubt whether these differences should be assessed at more than subspecific worth, but the female genitalia, when compared, and the early stages, when known, may decide this question.

Holo-Type (♂) and Allo-Type (♀), 1.xi.47, Helwan desert, in coll. mea.

Para-Types : ♂, 9.xii.25, leg. P.F. Clayton, Tih Plateau (in coll. Alfieri) (Plate IX, fig. 18); ♀, 1.iii.26, Wadi Askhar, Eastern Desert (coll. Alfieri) (Plate IX, fig. 17); ♂, 9.iii.37, Wadi Abiad (M.A.).

An Eremic species apparently confined to Palestine and Eastern Egypt.

The record by Rebel of a *Gnophos* ♀, taken by Herzog in xi near Cairo, must either be the above species (*subvariegatus*) or the *Scodionista* species (no. 324 below), and Rebel's identification of its *sacriarius* Stgr. is (though I have not seen the specimen) like so many others of his, erroneous, to judge from the description he gives.

I have examined the actual specimen (♂, xi.23, Wadi Ibtadi) (A.A.) mentioned by Andres-Seitz 1924 under the wrong determination *Gnophos palaestinensis* Calb.; it is in fact not a *Gnophos* at all, but the same *Scodionista* species (no. 324). Both *Gnophos sacriarius* and *palaestinensis* therefore are to be deleted from the Egyptian list.

**316. Gnophos ? dubitarius Stgr.**

Inhabits the mountains of South Sinai, whence there are some ♀♀ in collections A.A. and E. The genitalia of these differ from the genitalia of Himalayan examples in the British Museum, identified as *dubitarius*, by Prout. But these may not be true *dubitarius*. Perhaps Wehrli has cleared up the range of the forms hitherto included under *dubitarius* in Seitz IV Supplement, the relevant parts of which are unobtainable still. This great authority on the Geometrinae is, unfortunately, not very helpful to other students, and enquiries have not been answered.

**317. Zamarada secutaria Guen.**

Two, det. Prout (♂ genitalia : Prep. WA. 58, fig. 108), sandy plain near Gebel Um Lebas, North-East Sinai (A.A.). A Red-Sea Eremic species, ranging from Abyssinia to Palestine. An Arabian example was shewn in Fig. 14 (Plate opposite page 12) of this Bulletin, vol. 31, 1947. The Sinai examples are lighter and more reddish but the material is too scanty to serve as a base for a new name for the Sinai race, which may be variable.

**318. Zamarada latilimbata Rebel 1948 (Plate IX, figs. 19 and 20).**

Corresponding to this description are various specimens from the Eastern deserts of Egypt where it becomes scarcer northwards : one (E.) 14.iv.30, Wadi Rigm el Sheikh Salama (near Helwan), and many (M.)

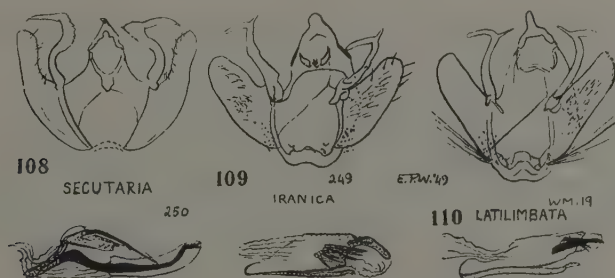


Fig. 108 to 110 : *Zamarada* ♂ genitalia, ventral open view with aedeagus separated; (108) *secutaria* Guen., (109) *minimaria iranica* Brandt (South Persia), (110) *latilimbata* Rebel 1948.

31.i.33, Wadi Aideb, Gebel Elba. The species is obviously closely related to *Z. minimaria iranica* Brandt but is somewhat larger and the male genitalia contain slight differences, as shewn in figs. 109 and 110; the uncus of *latilimbata* is narrower and more produced, and the cornuti are fewer. The genitalia of *secutaria* are also shewn for comparison (fig. 108) but this species is structurally less close. The aedeagus in this genus is very

peculiar, consisting of three parts very loosely attached to one another, and developed variously in the different species. The hooked costal arm or harpe, springing from the upper valve hinge, is also, apparently, a generic character.

**319. *Atomorpha hedemanni mabillearia* D. Luc.**

Two (M., E.), 9.v.17, El Arish, North Sinai; new for Egypt.  
Eremic, from North Africa to Arabia.

**320. *Selidosema combustaria* Pung.**

One, hatched 2.xi.13, ex-larva found at Amrieh (Mariout) 4.ix.13 (A.A.).  
New to Egypt. Previously known from Palestine.

**321. *Tephрина disputaria* Guen.**

With its foodplant, the *Acacia*, this moth may be found from North to South Egypt, and also in Sinai. Extremely variable, the ♀♀ being dimorphic. The larvae which I have found on *Acacia nilotica* at Maadi were of two colour-forms, grey and green. The grey form was confusedly mottled with brown and grey, and had traces of whitish longitudinal stripes; the setae and spiracles were as in the green form; the head was mottled with blackish; the dorsal canal was grey. The green form had black setae and white, black-rimmed, spiracles. The dorsal line or canal, was darker green, edged with fine yellowish, pulsating. Other lines, very faint and fine, yellow. Anal flap, mottled with yellowish green and tinged with mauve between the two black dorsal setae (the final pair). On somite 9 there was a purple stain above and behind the clasper and two purple-brown spots close together just behind the spiracle. A similar but single and smaller purple spot on somite 10 on the seta behind the spiracle. Head, rather flattened and slightly lilac-mottled; ocelli, glossy black. Thoracic feet, slightly lilac-tinged. There were also purplish shades on sides of somite 3. The pupal period in ix-x was nine days. The species is multivoltine. Palearctic-Tropical and Saharan-Sindian.

**322. *Tephрина sublimbata* Butl.**

One ♀ (Prep. WA. 131), 24.v.35, leg. Rabinovitch, Wadi el Ghe-deirat, North Sinai (A.A.).

This species, described from Aden, is new to Egypt; it has also been recently taken in Western Arabia, at Goz, near Qunfida, on 29.iii.48.

Presumably multivoltine, but its biology is not known yet. Red Sea Eremic.

**323. *Enconista exustaria* Stgr**

This species appears under the right name in Andres-Seitz 1925 and under the erroneous name of *Thamnonoma vincularia* Hubn. in Andres-Seitz 1924. This name must be deleted. It is widespread in Sinai, having been taken in the low northerly parts in xii and ii, and in the more

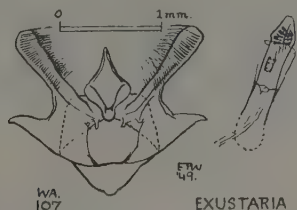


Fig. 111 : *Enconista exustaria* Stgr., ♂ genitalia, ventral open view, with aedeagus separated.

mountainous parts in iv. There is also one taken in v.20, Wadi Lagana, North Sinai (A.A.). The foodplant seems to be *Raetama raetam*; at least 1 ♀ (M.) is labelled 'leg. Adair, *Raetama reatam*, 2.iv.16, Wadi Gandali' (Eastern Desert). The phenology is probably bivoltine. The male genitalia are shewn (fig. 111). Western Eremic.

**324. *Scodionista amoritaria abdulhamidi* subsp. nov. (Plate IX, figs. 21 and 22).**

Less strongly marked than the typical form. Ochreous sandy-grey. Ante-median fascia obsolete. Submarginal line, pale, serrate, faint, preceded by a grey shade clearest at costa. Termen marked with grey dots at the nervures. All markings on hindwing even fainter than forewing. Underside, both wings, whitish ochreous with clear dark cell-spot. All other underside markings obsolete except sometimes the submarginal shade on the forewing costa.

Span : ♂ ♀, 24-30 mm.

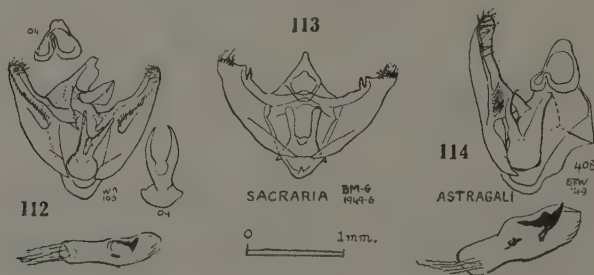
Holo-Type (♂) (small), 24.iv.14, Mahatta Mascara (Eastern desert) (A.A.).

Allo-Type (♀) (large), 15.xi.23, Wadi Ibtadi (Eastern desert) (A.A.).

Para-Types (2 ♂♂) (large), 15.xi.23, Wadi Ibtadi (Eastern desert) (A.A.); one ♀, 24.iv.14 (leg. Adair), Massara (M.); one ♀ (small), 15.xii.23, Bir Odeib (Eastern desert) (A.A.); one ♀ (large), 17.xi.23, North Galala (Eastern desert) (A.A.): and another ♀, same as allo-type (A.A.).

This species is bivoltine, flying in the Eastern Desert, including the valleys south-east of Cairo, in xi and again in iv. It varies in size very

much. Its male genitalia are shewn (fig. 112) and it will be seen that they differ remarkably from those of *Enconista exustaria*, and this to provide additional reasons for placing it in a different genus, *Scodionista*, as proposed by Joannis on the grounds of neuration and frontal development (see Seitz IV, p. 407). For comparison, the genitalia of *Gnophos sacrarius* Stgr. (Palestine) (with which it has been confused) and *Scodionista astragali* mea, a new species from South Persia, described on pages 369-370 of this Bulletin in another article, are also shewn (figs. 113 and 114); the latter is very closely related to the Egyptian species, and one may hazard the prophecy that the foodplant is similar. The larvae of the Egyptian species



Figs. 112 to 114 : ♂ genitalia, ventral open view, with aedeagus separated, of (112) *Scodionista amoritaria abdulhamidi* subsp. nov (04 indicates alternative views, made from another preparation, of the uncus with gnathos, above, and the juxta, below), (113) *Gnophos sacrarius* Stgr. (Jerusalem), with aedeagus removed, and (114) *Scodionista astragali* Wilt. (South-West Persia), right valve omitted.

might well be looked for on *Astragalus forskalei*. The Persian species lacks the tibial spine on the foreleg of the Egyptian and is univoltine autumnal, but its close affinity is proved by the male genitalia and neuration.

*Sc. amoritaria* Pung. was described from Palestine. I have not been able to examine an authentic example of it.

### 325. *Xenobiston casta* Warren

27.iii.35, Wadi Rishrash; 10.x.14, Maadi; 16.iv.27, Bir Odeib (Eastern Desert) (A.A.). Two, end v.24, leg. C.B. Williams, Wadi Digla; one, 15.x.17, Maadi (leg. Storey); one, 29.iv.13, leg. Storey, Maadi (Eastern Desert) (M.). Described from Wadi Natrun. Bivoltine, endemic Eremic.



Family : PYRALIDAE

Super-Family : GELECHIOIDEA

Families : SCYTHRIDIDAE, GELECHIIDAE, PTEROPHORIDAE, ORNEODIDAE, EPERMENIIDAE, and HYPONOMEUTIDAE.

Super-Family : TINEOIDEA

Families : PSYCHIDAE, TALAEPORIIDAE, TORTRICIDAE, BUCCULATRICIDAE, PHYLLOCNISTIDAE, and GRACILARIIDAE.

I regret that the above thirteen families must be left aside at present. Their names are given above to shew the systematic position.

Family : AEGERIIDAE

326. *Paranthrene tabaniformis* Rott.

Eight specimens (A.A.) bred from branches of poplar ("peuplier Caroline"), hatched : 27 i.20, 27.iv.40, 15.ii.20, Giza (near Cairo).

Euro-Siberian. Presumably introduced with the foodplant-tree.

327. *Synanthedon myopaeformis* Borkh.

Five (A.A.), bred from apple branches, hatched iv, v, Giza.

Euroriental. Presumably introduced with the foodplant.

328. *Chamaesphecia osmiaeformis* H.-Sch.

Five (A.A.), iv, v, Burg el Arab (Mariout); these were sent to Joannis who failed to determine them. It is but only recently that Mr. Alfieri could identify this species in Paris, where it was compared with Le Cerf's material kept at the Museum National d'Histoire Naturelle.

*C. osmiaeformis* inhabits Sicily and Southern Italy, and questionably also Dalmatia.

Families : EUPLOCAMIDAE, TINEIDAE, and GLYPHIPTERYGIDAE

The above three families must also be left aside for the present. They are named here to shew their taxonomic position with relation to the other families.

Family : COSSIDAE

329. *Cossus l-nigrum* B.-Baker 1894.

This name is prior to *niloticus* Joann., *pharaonis* Bang-Haas, and *henleyi* Roths. If, as I think, *niloticus* and *henleyi* are synonyms, they must sink to it. I have seen Bethune-Bakers's type and (though I have not compared the genitalia) I consider it the same species as *niloticus*

and *henleyi*. Most authors also consider *pharaonis* synonymous with *niloticus*. That *l-nigrum* is not a *Paropta* has already been asserted (Seitz II, page 450). It is unfortunate that the form *l-nigrum* is not normal but aberrational, but the name must be used instead of *niloticus*. The ground-colour of Bethune-Baker's type is yellowish grey, not whitish, as Rebel imagined.

The species, being a *Cossus*, has ♀ antenna simple.

The larva has on each abdominal tergite a broad purple-red band across the posterior half, finely interrupted by the dorsal line of the ground colour (whitish). There are two short forward-projecting lateral purple-red bars just above the spiracles, reaching towards a large purple lateral spot. On the back are two quite independent large purple spots. A broad yellow band shows, except where covered by the the purple markings, on each tergite; the joints are unpigmented. Spiracles, brown. It feeds inside the trunks of *Acacia nilotica*, also sometimes in tamarisk and willow trunks (A.A.). Emergences: vi and vii (A.A.).

It differs from the *Paropta* larva in various ways: the purple-red markings are less extensive; the head is more angular in form, and in colouring is darker brown anteriorly, paler posteriorly.

The species is Tropical African, for it occurs in the smaller form *henleyi* widely in the Ethiopian region. Except in size I see no difference between *henleyi* and *niloticus*.

### 330. *Cossus aries aegyptiaca* Hamps.

Until the relationship of the various forms of this group (including *cheesmani* Tams, *turatii* Kruger, *pulcher* Rungs and *bongiovanii* Kruger) have been worked out from the genitalia, it seems preferable to retain the original status which Hampson gave this form when describing it. They may quite well all be the same, variable, Eremic species. I have seen Hampson's type, from Suez, in the British Museum, London. Boyd recorded it from roughly the same district under the name *aries* (North Sinai: Mazar, and also El-Arish). Pungeler described *aries* from Palestine. The other forms named above inhabit Arabia and North Africa.

### 331. *Paropta paradoxa* H.-S.

Because of the black L-mark this moth has often been mistaken for (329) *l-nigrum* B.-B. The dark markings on the forewing are however coarser in this species than in *C. l-nigrum*. The ♂ hindwing is smoky. Being a *Paropta*, it has bipectinated ♀ antennae. It is quite variable in markings and size. All examples seen by me were taken or bred in vi except one

(M.) labelled 28.iii.15, Wadi Rashid, leg. Adair; this is a desert locality and perhaps a mistake in labelling has occurred, since all other specimens have been taken on oasis ground. It has been bred from larvae boring *Albizia lebbek* and *Ficus pseudo-sycamorus* trunks (M. and A.A.).

The larva has, on each abdominal tergite a broad purple-red band across the posterior half; projecting forward at right-angles from it are four purple-red bars, the two central ones joined dorsally by a shorter purple-red cross-bar on the anterior part of the tergite, thus enclosing a kidney-shaped or dumbbell-shaped pale area. The underside and somital joints are not pigmented. Spiracles, brown. The head is rounder and wider than in *Cossus l-nigrum* (No. 329 above), and is more brownish posteriorly; the body is more extensively marked with purple-red, and lacks the pale dorsal line of that species.

The genitalia of ♂♂ from Egypt (M.) and Palestine (P.) have been compared and they agree perfectly.

An East Mediterranean species.

### 332. *Holcocerus gloriosus faroulti* Ob.

One, 25.vi.38, Mareopolis (Mariout). A univoltine steppe-desert moth. If, as I think, the North African form, described by Oberthur, is conspecific with the Palestinian *laudabilis* Stgr., Iraqi *mesopotamicus* Walk., and Central-Asian *gloriosus* Ersch., the moth is Pan-Eremic. This has not yet been proved however. If so, the above names represent good races or subspecies.

### 333. *Eremocossus proleuca* (= *reibelli* Ob.) *mussolinii* Tur.

I have been Hampson's type and it appears to me to be identical with the species hitherto known to most authors as *Hypopta reibelli* Ob.. Typical *proleuca* Hamps. inhabits Arabia; I have not seen a long series of typical *reibelli* so that I do not know whether this name may not perhaps be still used for the North African race. Turati's form is rather larger and darker. More recently (1939), Krüger has described from the Syrtis, as a further new species, *Hypopta cognata* but this form appears exactly like Hampson's. In my opinion these are all one variable Eremic species, ranging from North Africa to Eastern Arabia, whence I have seen examples of *proleuca* from the west and from Oman.

From Egypt there are two examples of the form *mussolinii* (A.A. and M.), 5.ix.16, leg. Adair, El-Romanî, North Sinai.

A desert moth.

**334. *Dyspessa* (?) *jordana* Stgr.**

Illustrated in colour in Andres-Seitz 1923. I have only found one very worn specimen, probably of this species, 30.iv.38, Mareopolis (Mariout) (A.A.). The other examples determined with this name were in fact the immediately preceeding species, *proluca*.

A desert moth. Eremic.

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**335. *Dyspessa* *habylaria* B.-H.**

Flies in the Mariout and North Sinai in iii, iv. A very variable series. Univoltine. A steppe desert moth. Eremic, North Africa to Arabia.

**336. *Zeuzera* *pyrina* L.**

Flies, and has been bred, in v.. Univoltine. Bores branches of pomegranate and willow (*Punica* and *Salix*); Andres-Seitz also mentions *Ficus sycamorus*. Is a fruit-tree pest. An oasis moth, of Upper Egypt. Probably originally Euroriental, but now occurring in America too.

**337. *Phragmatoecia* *castaneae* Hübner.**

Flies in vii, ix, x. The phenology in Egypt is obscure, perhaps univoltine with an extended emergence.

Food plant : *Phragmites*, boring in the stems.

Occurs in Upper Egypt, from the Mariout, through the Delta, to the vicinity of Cairo.

An oasis moth. Euro-Siberian and Pan-African.

Sub-Order : MONOTRYSA

Super-Families : **INCURVARIOIDEA, NEPTICULOIDEA, and HEPIALOIDEA.**

Sub-Order : DACNONYPHA

Family : **ERIOCRANIDAE**

The above groups must also be left aside for the present. However, they contain few, if any, Egyptian representatives. The same can be said of the family Micropterygidae, now separated into a distinct order, Zeugloptera.

**THE EGYPTIAN FAUNA; ITS COMPONENTS, DISTRIBUTION  
AND PROBABLE HISTORY**

(Studies in the geography of Lepidoptera, V (\*) )

This chapter is not an exhaustive zoogeographical treatise, but an at-

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(\*) The previous article in the series « Studies in the geography of Lepidoptera » was « Some Middle East Migrants, their phenology and ecology » (*Trans. R. Ent Soc. London*, 96. 10. 1946)). Taken separately, this chapter may be considered as a further article in the series.

tempt to indicate, from a modern standpoint, and by taking as examples a few well-defined ecofaunae, the main directions from which the Egyptian Lepidoptera are derived.

Readers of the foregoing list will notice that the species in it are classified into geographical categories (e.g. Eremic, Euroriental, etc.) as well as ecofaunae (e.g. oasis, desert, etc.). The former classes were referred to not by terms used in popular geography, that is of continents and political units, but rather by those which describe world climatic zones, or parts thereof. For instance, the term "African" is not used absolutely but in combination with "Tropical", which it qualifies, to indicate a topographical sector of the Tropical Zone. These classes are categories of species ranging over the parts of the world so indicated, or at least with headquarters in those parts.

To recapitulate briefly, the main categories represented in Egypt, are :

(a) Almost or quite world-wide.

(b) Cool-temperate : i, Holartic ; ii, Euro-Siberian.

(c) Warm-temperate ; i, Euroriental ; ii, Holo-subtropical ; iii, Mediterranean ; iv, Eremic.

(d) Tropical : i, Holo-subtropical-tropical ; ii, Tropical Eremic (Sudan-Deccanian) ; iii, African Tropical ; iv, Paleo-Tropical.

Some of these can be further subdivided, e.g. "Eremic" into "Western Eremic", "Red Sea Eremic", "Saharan-Sindian" ; and "Mediterranean" into "East Mediterranean", "Anatolian-Iranian", etc. These terms were defined in the Introduction, Part I.

It is not always easy to attribute a species to a definite category, and these difficulties arise partly from lack of information about the species, and partly because the categories lack a detailed ecological basis.

Previous authors, discussing the range and history of Egyptian lepidoptera, have wrongly identified certain species and copied old and erroneous records. They also wrongly treated geographical categories as units in their historical reconstructions ; they seem to have thought that all members of a category had a common history. It seems better having in the list indicated the geographical category to which each species may be assigned and the broad eco-fauna to which it belongs, not to attempt to discuss the history of these categories as a whole until we have analysed some of them more closely from the geographical viewpoint. Even the broad ecofaunae such as oasis-, desert-dwellers, etc., contain species whose known ecology shows them to have arrived in their present habitat along convergent paths of heterogeneous origin ; still more so the members of the geofaunae. Unfortunately the close ecological classification of all is not yet possible, for the ecology of each species differs to some extent at least and in many cases is still obscure. Of some, enough firm facts are known

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to permit a rough and ready ecological classification, and we must hope that these "known" species, if we consider a varied assortment of them, exemplify fairly well the ecology of the country's lepidopterous fauna as a whole, and that deductions therefrom will be acceptable for the whole. Whether the same deductions will be valid for other orders of the animal kingdom, I do not know.

The closer ecological analysis of the lepidoptera which will now follow will be by grouping them according to foodplant. This type of ecological grouping is possible in lepidoptera, which are an order that cannot be grouped into the Uvarovian ecofaunae (\*) (saxicolous, arbusticolous, etc.). The broad ecofaunae already indicated in the list include diverse foodplant-groups of lepidoptera which are not always confined to a single ecofauna (e.g. the *Acacia*-feeders, which inhabit both desert and oasis to some extent).

It is maxim or fundamental assumption that a species, if highly specialised in its ecology (as for instance are, in respect of diet, these monophagous or oligophagous species) were hardly less so in the recent geological past. If a whole group of close relatives is thus specialised, the specialised tendency goes back to an even remoter past, in fact to the ultimate ancestor of the whole group. During the group's development the evolving species may have changed locality but not, in such cases, foodplant.

The following are some of the foodplant-groups most easily distinguished in Egyptian lepidoptera :

(A) Scrophulariaceae-feeders, (B) Salicaceae-feeders, (C) Grammineae-feeders, (D) *Tamarix*-feeders, and (E) *Acacia*-feeders.

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(\*) B.P. Uvarov (1938) : Ecological and biogeographical relations of Eremian Acrididae (*Soc. Biogéog.* VI : La vie dans la région désertique nord-tropicale de l'ancien monde [Lechevalier, Paris]). The author in that work showed how desert grass-hoppers could be grouped into broad types, characterised not only by ecology but by morphology and colour. Owing to their complete metamorphosis and winged adult stage, lepidoptera are freer than orthoptera from their environment. In their larval stage they usually correspond to their immediate surroundings very closely; indeed, caterpillars can be grouped into colour-types typical of foodplants with a similar aspect or typical of peculiar feeding-positions (e.g. a colour-type common to larvae feeding on tamarisks and conifers; a pattern-type characteristic of larvae feeding externally on grasses; a colour-type characteristic of mining larvae; etc. But the conspicuously-coloured types are found on dissimilar foodplants). But these larval characters are completely lost in the free-moving adult; only the Wainscot-moths (see page 445 below) resemble as adults their larval environment. Many lepidoptera, moreover, are only known in the adult stage. In others, though the foodplant is recorded, the larva's aspect is unknown. For all these reasons and also to save space, it is best not to discuss (except in the case of the Wainscots) the morphology or the coloration of lepidoptera with relation to their biotopes, except to make two remarks; being profusely scaled and hairy, lepidoptera, as adults, are rarely adapted to their environment in a morphological way, but rather by means of colouring and pose; and secondly, when lepidoptera are classified as relatives it is because of their structural similarity, and therefore every mention of affinity implies a morphological fact. Therefore, while the relation of morphology to environment in lepidoptera will be ignored in what follows, the importance of morphology, as an implicit fact in taxonomic relations, must be constantly borne in mind.

## (A) The Scrophulariaceae-feeders.

This family of plants is a large and cosmopolitan one, composed mostly of herbs and undershrubs. The genera *Verbascum*, *Celsia*, *Scrophularia* and *Linaria*, with which alone we are here concerned, are all herbs. *Verbascum* and *Celsia* are very close to one another but botanists classify *Scrophularia* and *Linaria* further away. It is therefore curious that *Scrophularia* should be the alternative for *Celsia*- and *Verbascum*-eating lepidoptera, while *Linaria* is an alternative of neither but eaten monophagously by specifically distinct relatives.

*Verbascum* (mullein) ranges over the North-temperate zone of the Old World and consists of large perennial herbs with stout tap-roots. *Celsia* is a smaller similar genus inhabiting the Old World, and chiefly the Mediterranean region. *Scrophularia* (figwort) has a North-temperate range; its flowers attract wasps. *Linaria* (toadflax) ranges over the Northern Hemisphere and also inhabits South America.

These four plant-genera are foodplants of two widely separated Lepidopterous genera, with monophagous or oligophagous feeding-habits, viz. *Melitaea* and *Cucullia*. Not the whole of each genus is monophagous on these plants, however, for while a group of *Melitaea* species is so, other groups are more polyphagous on other genera; similarly while one striking group of *Cucullia* species is so, another group feeds oligophagously on *Compositae*. In both genera, this foodplant group has a similar world-range, Euroriental. Some of the species are Atlanto-Mediterranean, some Anatolian-Iranian, some are broadly Euroriental, and overlap the range of the other more local species, while a few (including two of the Egyptian ones) are Eremic. The genus *Cucullia* especially has numerous local species in South-West Palearctis in this foodplant-group. Lc

The Egyptian lepidoptera in this group are: (9) *Melitaea deserticola* (*Linaria*), (10) *Melitaea trivialis* (*Verbascum* and *Scrophularia*), (107) *Cucullia strigicosta* (*Scrophularia*).

Egypt is evidently comparatively unfavourable territory for these lepidoptera, both on account of their fewness here, and their localness. Syria and North-West Africa are decidedly more hospitable to the group in both respects. In Egypt they are mostly easily obtained in South Sinai, which is faunistically not a typical Egyptian habitat, having a more pronounced Anatolian-Iranian character than the rest of the country.

The position of Sinai in the Mediterranean basin is interesting, and a digression about it may be forgiven. It occupies the corner of the Mediterranean basin where the Mediterranean fauna is weakest. Yet the mountains in the south of the peninsula, though inhabited by not a few Tropical

species, have, at higher elevations, a climate and vegetation akin to that of the South-West Asian steppes. Because of this, Euroriental and Anatolian-Iranian species (the latter a sub-category of Mediterranean in the broader sense) and even a few Euro-Siberians are at home in it. Though the Eastern desert of Egypt is in some respects a continuation of Sinai, not all the diverse Sinai-dwellers are found there. It is not so much the Gulf of Suez that prevents many Sinai lepidoptera from inhabiting the Eastern desert but the progressively hotter drier climate and poorer vegetation. Some (e.g. the Eremic *strigicosta* and *deserticola*) inhabit it but are scarcer there than in South Sinai; but others (e.g. the Euroriental *trivia* and, to go for a moment outside our foodplant-group, the Euro-Siberian (27) *icarus*) cannot inhabit it at all. To use the French biogeographers' terms, "desert" and "pre-desert", for the Eastern desert and the plateau of Sinai respectively, it might be said that *strigicosta* and *deserticola* are "desert" species, while *trivia* and *icarus* can only penetrate "pre-desert." This is true but does not explain why they are not found in the Mariout, which, with its comparatively heavy rainfall (10 inches per annum average) and steppe vegetation also qualifies as "pre-desert". Their absence therefrom must be explained by the intervention, both now and in the recent geological past, of the Nile valley and delta, and by their absence from Cyrenaica, of which the Mariout can be considered an eastward extension.

That the Nile valley and delta, an oasis biotope, are, especially in the North where broadest (150 miles!) an ecological barrier to desert and steppe species, is due partly to the different vegetation, greater humidity, dense human population and intense cultivation of the dry land there. The present salt mud-flats and marine lagoons of the north delta coast are even more a barrier to steppe and desert insects. Nor can steppe species circumvent the delta by following it southwards to its neck and crossing the valley at its narrowest near Cairo; for, apart from the fact that even here the irrigated valley is about ten miles wide, the desert here lies well south of the coastal rainfall belt; especially west of Cairo, its scanty vegetation, of the meagrest desert type, is not enough for steppe species; and even desert species of insect are scarce there, for there are no long valleys, as on the eastern side of the Nile, draining a wide hilly area and fostering, in their bottoms, a concentration of desert herbs and shrubs. The combination of this relatively less habitable desert on the western side with the intervening ten miles of cultivated oasis, unsuitable to most desert life, makes the Nile valley, even at its narrowest, an ecological obstacle to the advance of many lepidoptera today.

In the past too, the valley and delta have been an ecological barrier to steppe and desert faunae, to judge from the following geological facts

given in John Ball (1939), "Contributions to the geography of Egypt" (Cairo Govt. Press).

In the Middle Pliocene, i.e. about 4,000,000 years ago, the Nile valley was a Marine estuary, almost as far south as the Tropic, and the Mediterranean Sea communicated freely with the Indian Ocean through the Straits of Suez and Bab-el-Mandeb (\*), and with the Atlantic through the Straits of Gibraltar. The sea-level was then relatively 180 feet higher in Egypt, when the local mid-Pliocene subsidence was greatest. Thereafter the land gradually rose again, and the sea retreated, until, about 100,000 years B.C. the Isthmus of Suez emerged, joining Africa once more to Asia. This happened in Pleistocene times a little before Chellean man entered the Nile valley, and since then the land-bridge between Africa and Asia has subsisted. At that time, moreover, owing to the advance of the Nile delta, the north coast of Egypt was approximately where it was now. A slight subsidence followed but was approximately compensated by the delta's copious silt, so that the sea never came within 80 km. of Cairo (50,000-20,000 B.C.).

As regards climate, again following Ball, the last pluvial period seems to have been about 50,000 B.C. in early or middle Paleolithic times. The Wadi Qena in Upper Egypt was then a flowing tributary of the Nile. The lower Nile valley itself probably then contained only the waters of the Atbara, for Ball concludes that at that time both the Blue and the White Nile poured their waters into a vast Tropical inland basin, the Lake Sudd; but soon after, a small tributary of the Atbara, at what is now the gorge of the Shabaluka (or Sixth) Cataract in the Sudan, perhaps invigorated by this last pluvial period, cut back through the high ridge separating this vast lake from the lower Atbara basin, and so captured for Egypt the waters of the two Tropical rivers. The lake gradually dried up and became the Sudanian plain, with Khartoum at the point where the two Niles met; their waters flowed thence, for ever after, through the constantly deepening Shabaluka gorge and northwards to the Mediterranean. As the late Paleolithic period came in, the climate became much drier, for the enormous silt deposits of the now enlarged Nile blocking the mouths of the tributary wadis in Upper Egypt show that desert conditions then prevailed from Wadi Halfa northwards. The Wadi Qena dried up, and even the Atbara became seasonal. Thus, for the last 20,000 years a copious Nile has flowed down a desert-bordered valley, with a delta about as extensive to the north

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(\*) Blankenhorn placed in the early Pleistocene the date of the irruption of the Indian Ocean into the Red Sea rift, but Ball, a later authority, is doubtless to be preferred in placing this event earlier.



as it is today; time has only altered the habitat, during this long period, by the effect of the increasing human cultivation and irrigation on this unique natural feature, the Nile valley.

It is worth while speculating what the vegetation and attendant fauna of Egypt were like during the last pluvial period, 50,000 B.C., before the climate became so arid, and also during the progressive desiccation that has followed it. The rains were probably at first enough to permit park woodland and jungle along the Mediterranean shores and both sides of the Nile. The trees would have been transitional between temperate and tropical; their botanical composition would have depended on whether the rainfall was distributed all the year round or seasonal. Presuming that it was seasonal (which in any case it would have been as desiccation began) a woodland transitional between Mediterranean scrub-wood and Sudanian parkland types must have occupied most of Egypt, the former strongest in the north, the latter in the south, with an intermixture of both over a wide area, because of the comparative flatness of the landscape. Close to the river those particular species of tree and shrub which thrive in a waterlogged soil would form dense thickets. To be more precise, the following species of tree would probably have then been found in Egypt, with their attendant insect faunae: (Mediterranean) *Cupressus horizontalis* and *Juniperus oxycedrus*, *Pinus halepensis*, *Ceratonia siliqua*, *Arbutus andrachne*, *Pistacia atlantica*, *lentiscus*, *terebinthus*, *Rhus* spp. div., *Crataegus azarola* and *sinaica*, other thorns including probably *Paliurus*, *Prunus*, *Zizyphus*, *Lycium*, spp. div.; (Tropical) *Acacia spirocarpa*, *Balanites aegyptiaca*, *Ficus pseudo-sycamorus*, *Grewia* and *Euphorbia* species, etc.. Heavy soils would probably be treed with *Tamarix* spp. div., *Zizyphus spina-christi*, *Acacia nilotica (arabica)*, wild *Phoenix* and probably other palms. Streamlets in the North must also have been overgrown with *Myrtus*, *Laurus nobilis*, *Rubus*, etc.. Indigenous valley herbs and grasses must have then included *Pluchea dioscoridis*, *Saccharum aegyptiacum*, *Arundo donax*, *Cyperus papyrus*, etc.. Clearings, if any, would have been very grassy, of a savannah type, but grading on higher ground in the north into Mediterranean maquis types, such as *Cistus*, *Poterium*, etc.

As the rainfall diminished the trees must have retreated, some to the valley bottoms where the subsoil was always humid, others to the remoter hill-tops, which still caught the rain; steppe or savannah grasslands would have become more widespread; finally these too in turn would have retreated, the former northwards to the Mariout and Sinai the latter southwards to the Gebel Elba, leaving the vast parched deserts of the centre, more or less as they are today and as described and illustrated in Part I. This picture will show that the steppe species discussed probably entered Egypt during the desiccation (circa 50,000-40,000 B.C.) and the desert species



at the end of it (30,000-20,000 B.C.). Some of the latter were returning, having been driven out of Egypt by the rainy period, though perhaps at certain spots which are now the very driest hottest and most sterile in Egypt some of them had survived in Egypt through that period and so can be considered to that extent ancient indigenous inhabitants.

The ecological barrier of the Nile valley and delta hinders or has hindered, as we have seen, the westward spread of numerous eastern species which might otherwise inhabit the north-west of Egypt and even go further west. It also hinders the eastward spread of western steppe and desert species which may have reached the Mariout from Cyrenaica; these however are less numerous, and not represented in the *Scrophulariaceae*-feeding group.

Andres-Seitz indeed remarked that Egypt had three times as many species common with Syria than with Algeria, though they failed to perceive the significance of the Nile as a frontier. Since my list differs somewhat from theirs, I have reexamined the point which they made, in order to confirm it. Of the 276 species inhabiting Egypt and named in Part I, after omitting the migrants and tropical species for reasons given presently, I find that 15 species are not found east of the Nile in Egypt though inhabiting countries further east; the 6 are not found east of the Nile at all; that at least 40 are not found west of the Nile in Egypt though inhabiting countries further west; and that about 40 are not found west of the Nile at all. For the remainder the Nile is not a limit in any sense. Future explorations may slightly reduce these totals, but the picture is clear, and agrees with Andres-Seitz. They illustrate well that the recent drift of population into Egypt has been chiefly from the east; and they also show that the eastern side of Egypt has a richer fauna than the western. /ok

The migrants were excluded from the count because their present powers of flight, rather than a hypothetical history, can explain their presence anywhere. The Tropical species are reserved for consideration under a later and more appropriate foodplant-group.

Of the smaller group of species, limited absolutely on the East by the Nile, we may quote as examples (12) *ballus*, (67) *philopalus*, (124) *rosea*, and the genus *Somabrachys* (255, 256); also, as far as Egypt is concerned, but not absolutely, (28) *abencerragus*, (194) *adulatrix*, and, if it were not for the Sinai outpost, (49) *stauderi*. Examples of the larger group of steppe or desert species, limited absolutely on the west by the Nile, (123) *cerealis*, (154) *melanurina* and some species to be named under the next foodplant-group; also, as far as Egypt is concerned, but not absolutely, (9) *deserticola*, (10) *trivia*, (27) *icarus*, and (119) *aurora*.

The species absent from one side or the other of Egypt yet occurring on both sides in other countries must have become widely distributed at an early period, possibly across Egypt, or possibly further north or further south, and then, at a more recent period, have entered the country from one side only. This may have occurred in various ways, according to the ecology of the species concerned. As regards the *Scrophulariaceae*-feeding steppe and desert species, *trivia* is a more northerly species and it probably spread from Persia to Portugal (this seems more probable than that it spread from Portugal to Persia) at a comparatively early date, e.g. the Middle Tertiary. It is more likely that its territory, or its westward route, was then Turkey and the Balkans (where it is still found), and that it did not then inhabit Egypt, for, to judge from the geological evidence, the fauna of the South and East Mediterranean, was more tropical than temperate; but possibly, especially towards the end of the Tertiary, the high ground to the East (South Palestine, Sinai, Arabia Petraea and the Galala plateau), during drier periods, may have been habitable by steppe species; nevertheless, even if so, a sea-strait at Suez and another sea-arm up the Nile valley, as we have seen, existed then and would have barred them from easy progress further westwards; it is doubtful, too, whether the requisite habitat existed for them on the low ground even when firm land ultimately united Asia and Africa.

The presence, therefore, of a few of these steppe species in North-West Africa is probably not due to a migration across Egypt but rather to an advance along the North Coast of the Mediterranean and across the Saint-Prestian bridge (late Tertiary), or even the early Pontian land-bridge (Miocene) between the Balkan Peninsula, Sicily and Tunis.

The hilly steppe territory of Palestine and Sinai was evidently a shorter way to Egypt than the eastward return from Tunis, and this must be one reason why these species are more numerous on the eastern side of the Nile: it was also an easier way, because of the more continuous high ground: the long low expanse of the Syrtis desert in Tripolitania could not be by-passed by high-ground to the south, as could the north-coast desert of Sinai. Many of these steppe species seem unable to exist at low elevations south of about latitude 31, and it is significant that *trivia* is confined in Egypt to considerable heights in Sinai. Such heights, moreover, were lacking in Egypt west of Suez.

On the other hand, *deserticola*, pertaining rather to a desert than a steppe fauna (though it penetrates non-desert ground in the Lebanon) probably crossed Egypt to reach its present easternmost localities in South-West Asia (if it did not originate in Sinai, in which case it crossed Egypt to reach North-West Africa); in either case it died out west of the Nile,

probably when the Late Pleistocene desiccation reached its climax; it has survived in the Eastern desert where the more broken relief permits local concentrations of its foodplant such as are not found in the Libyan Desert, though it grows in the Mariout. (The butterfly occurs in Cyrenaica, and it is possible that it will be discovered in the extreme north-west of Egypt).

(B) The Salicaceae-feeders.

This group is also comparatively poorly represented in Egypt, but again the location of its few representatives is significant. They are : (206 a) *lesbia*, (206 b) *puerpera*, and (326) *tabaniformis*.

The two tree-genera *Populus* and *Salix* comprise the whole family *Salicaceae*. *Populus* is a North Temperate genus of trees. In arid lands poplars are always oasis-trees and this is naturally so in Egypt. They are not indigenous but introduced in the Nile valley; but they are probably indigenous in Saint Catherine's oasis, and (a different species) Siwa Oasis (\*).

*Salix* is a cosmopolitan genus of trees and shrubs. In arid lands willows are always an oasis-tree and this is the case in Egypt; the willows of the Nile valley are not indigenous but introduced.

The oligophagy of many Palearctic lepidoptera on these two trees is already well-known. The Notodontid genera *Cerura* and *Dicranura*; a group in the genus *Earias*; a group in the genus *Catocala*, and some Aegeriid genera (e.g. *Aegeria*, *Eusphesia*) or groups in genera (*Paranthrene*) show an evident long-developed attachment to the trees; there are also various other species with fewer close relatives, which may therefore be presumed to have more recently become thus oligophagous. Of all these; only two genera, *Paranthrene* and *Catocala*, are found in Egypt. They are both Holarctic genera in range with a bias to Cool Temperate rather than Warm Temperate. On these grounds alone, therefore, it is not surprising that only three species are Egyptian, and indeed only one is known from the Nile valley (*P. tabaniformis*). The two *Catocala* are only known from the heights of South Sinai. One of them, the Euroriental *puerpera*, is not found again in Africa west of Sinai until Algeria; the other, the Eastern-Eremic *lesbia*, finds here its absolute western limit.

*P. tabaniformis* extends east and west of Egypt, though not known from Palestine, Syria, Iraq or Iran. It must have been introduced into the Nile valley with its foodplant, and indeed has not been seen for twenty years.

(\*) None of the group has been recorded from Siwa, presumably because a special search for them thereon was not made, or perhaps, if taken there by the Armstrong College Expedition because the material has not been sent to a quarter capable of identifying it; it would be exceedingly interesting to see what lepidoptera of this foodplant-group, if any, are attached to the Euphrates-poplars of Siwa oasis; they must have been isolated there from a remote period, and this may have resulted in new species.

The poplars and cypresses of the mountain-oasis of St. Catherine's are reminiscent of the oases in the plateau of South-West Persia, where both *lesbia* and *puerpera* are common. The interesting capture of these two Red Underwing moths in South Sinai by Efflatoun Bey demonstrates that this district is, in its oasis as in its more xerophilous fauna, an outpost of the Anatolian-Iranian geofauna. Actually the two moths are classified as Eastern Eremic and Eurooriental but these two categories are closely related with the Anatolian-Iranian, all three sharing considerable territory. In many cases of moth, decision between these three categories is debatable. These two moths will probably be found in mountain oases (if any!) in Arabia Petraea. Their nearest station, at present known, is Palestine. Their probable history therefore, is similar to that of *trivia* and *strigicosta*, respectively, in the previous group, despite their very different ecology, and readers are referred back to the detailed discussion under that foodplant-group.

Before leaving this interesting oasis fauna I would like to add that when analysing the non-migratory species, to which the Nile valley is a limit, I found that, whereas it was an absolute eastern limit to some steppe and desert species, it was so to only one oasis insect (313) *fatimaria*, a north-west African moth of a warm-temperate genus. I also found that, whereas it was a western limit to many steppe and desert species, it was only such a limit to seven oasis species (\*), of which perhaps two can be considered tropical, e.g. the *Acacia*-feeders (11) *livia* and (311) *dentataria*, and five are Palearctic e.g. (152a) *scotoptera*, (197) *wutzdorffi*, (59) *grandis*, and (331) *paradora*. These it may be noted, are not exclusively oasis species on better-watered territory, e.g. Palestine and Syria; nor is (313) *fatimaria* in North-West Africa. No doubt they reached Egypt during a more or less recent Pluvial period when the intervening tracts of land were better watered by rain than now; they are now isolated in the oases of Egypt. The other oasis species are either distributed on both sides or on neither side of the Nile oasis.

The above two foodplant-groups, and the miscellaneous oasis-moths mentioned at the end, will serve as examples for reconstructing the history and origin of other lepidoptera of the more Temperate geofaunae inhabiting Egypt. Next comes a foodplant-group containing separate Tropical and Tem-

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(\*) When an oasis species is said to be limited by the Nile, not the river itself is meant to be the limit, but the valley and delta oasis; i.e. the oasis species occur on both banks of the Nile, the actual limit being the eastern, or western, desert border of the oasis. Their range eastwards (or westwards) is, usually outside Egypt, for the other oases of Egypt, being less favourable or less well-explored, do not seem to contain these species.

perate geofaunae within it, on account of the world-wide range of the plant in question, grass.

### (C) The Gramineae-feeders.

This group is somewhat better represented in Egypt than the last two, but still cannot be said to be richly represented here. It is of exceptional zoogeographical interest, because here meet the world's two graminicolous insect-faunae, the temperate and the tropical. The temperate (steppe) and tropical (savannah) grasslands of the Old World are divided in the West by the Eremic Zone which is relatively grassless and consequently a barrier between the two. The Eremic Zone's grasses are only plentiful and dense on oasis biotopes such as the Nile valley; this example is however an important exception, for the river traverses the zone from the Tropic of Cancer to the edge of the Temperate latitudes. It seems therefore to afford a bridge for grass-feeders right across the Zone, though before the floods were controlled by the present-day canal-system the valley may have been less continuously grassy than it appears today. It seems also to be fairly effectively isolated from the savannah grass-lands of the Sudan by the gap in continuous riverain cultivation between Aswan and Wadi Halfa, i.e. the apparent bridge is in fact interrupted by desert just South of the Tropic. Many of the grass-feeders eat cultivated cereals as alternative foodplants and so have not been decimated by the intensification of cultivation as have some other oasis insects, particularly the tree-feeders.

Little can be said about the lepidoptera dependant on desert-grasses, for the early stages of such have not yet, to my knowledge, been recorded, and one therefore at present only surmises that certain lepidoptera are desert-grass-feeders; these few species seem however to be Eremic in range and have presumably developed specialised physiological qualities suiting them to the extreme climate of their habitat; doubtless lack of these qualities prevents both the temperate and tropical grass-feeders from living all the year round on such poor grasses as the Egyptian desert provides.

Gramineae are a very large order of monocotyledons and are world-wide in range. They are specially important in the Temperate Zones where they form prairies, steppes, etc.. Some are annual, others perennial. In Egypt they are especially abundant in the Nile valley and delta. Many of these oasis grasses have a more or less extensive Eremic distribution, but others a wide Tropical range. Desert grasses are scanty: one species of desert-grass (*Arenatherum forskalei*) is Pan-Eremic in range, while another (*Panicum turgidum*) is Saharan-Sindian; a third (*Aristida obtusa*) extends to South Africa on dry ground. On the other hand, the steppe-mountain grass *Poa sinaica* ranges from Sinai to the Caucasus and Persia, while *Poa persica*



ranges from Sinai to Central Asia. The Gebel Elba has many tropical grasses not growing elsewhere in Egypt. Egypt is thus a meeting place for diverse geographical categories of grasses, though some are confined to opposite corners of the Kingdom and so do not actually overlap.

Grass-feeding groups exist in many different families of Lepidoptera : the Satyrid butterflies, certain Skipper (Hesperioidae) genera or at least groups in genera (e.g. *Parnara*, *Pelopidas*, *Gegenes*), several distinct groups in the Agrotidae (to be discussed in greater detail later) and of course many Pyralidae.

The Satyridae, so plentiful elsewhere, are absent from Egypt except for one steppe-mountain grass-feeder inhabiting the heights of Sinai, (1) *pisidice*. The absence of the common grass butterflies of the Mediterranean from the Nile valley and delta is very remarkable, for there is plenty of grass. Their absence cannot be entirely explained by the deserts intervening between the delta and the nearest habitats (Cyrenaica and Palestine), for in the recent geological past there have been several Pluvial periods when these deserts must have become habitable to some of them. Perhaps even more remarkable is the absence of the Tropical Satyrid butterfly *Iphthima asterope* Klug. This little grass-feeder occurs commonly in Tropical Asia and Africa, including Eritrea and South-West Arabia; it is fairly common in coastal Palestine and Syria, rather less so in Cyprus. In Asia its absence from Iraq and Persia is noteworthy, and in Africa it is not only absent from Egypt but from the whole North-Saharan and Mediterranean region. On the African shores of the Red Sea, Port Sudan appears to be its northern limit (Longstaff, 1913). That it reached Palestine and the Eastern Mediterranean via the Hejaz Mountains (Western Arabia) is obvious; but at the time of this northward advance it seems unlikely that it could not have similarly advanced from Eritrea along the mountains of the western Red Sea shore and so into Egypt and the Nile valley.

We may remark that the Mediterranean Satyrid butterflies are also absent from the oases of Iraq (which they inhabit on mountainous or steppe biotopes only), and this seems to give a clue to the absence of these species from Egypt : the same factor appears to be responsible for the absence both of Temperate and Tropical grass-feeding Satyridae from Eremic oasis biotopes; apparently oasis grasses and conditions are unsuitable, and they require grasses nourished by rainfall; such grasses are absent from almost all of Egypt, but their abundance in the Gebel Elba makes possible the eventual discovery of *asterope* there.

The three common Skippers, (52) *thrax*, (53) *borbonica* and (54) *notodamus*, are unlike the Satyrid family in their commonness in Egypt. They are all three very much at home in the African sub-Tropics, though

northwards and southwards thereof they do not have identical ranges. Their requirements seem the opposite of those of *asterope* and the Mediterranean Satyrid butterflies discussed above, for in Egypt at least they are most numerous on oasis ground! I have not seen them so common on rain-nurtured grasses elsewhere in the Middle East. They may be considered ancient and indigenous inhabitants of Egypt and especially of the Nile valley. Their remoter ancestry is Tropical.

Grass-feeding moths differ in their adult behaviour from grass-feeding butterflies, and constitute a good (and perhaps the only Lepidopterous) example of an Uvarovian ecofauna (see footnote on page 434), i.e. all the adults resemble each other; but the resemblance is one of colour and pattern rather than morphology. The similarity is striking enough to have given rise, in Britain, to the popular term "Wainscots" for these moths. Their resemblance to one another would appear to be a case of what Cott calls "common cryptic coloration". This he defines as "a superficial similarity that is independent of affinity but correlated with similar conditions of life". The world-ecofauna to which these moths belong, is the graminicolous; it really comprises several distinct ecofaunae, if we use the word in a narrower than the Uvarovian sense: namely, the faunae of various habitats dominated by Gramineae, ranging from dry grasses on the one hand (e.g. desert and dune grasses) to the reeds of lakes and swamps on the other. The common visual character of these biotopes as an environment of the moth, is the rectilinear, usually vertical, pattern of the predominant vegetation and the longitudinal striation of its leaves and stems. Though the new growth is fresh green, a straw colour is the usual hue of the stems and older leaves, where the adult moth rests by day. Corresponding to this, the common facies of wainscot moths has a straw ground-colour (\*), inclining to red-brown or smoky-grey, and varied by longitudinal striation along or between the wing-nervures. The striation thus runs counter to the cross-lines or fasciae typical of most moths; these fasciae have disappeared in nearly every species of Wainscot moth, but are sometimes represented by dots on the nervures. The conspicuous reniform, orbicular and claviform stigmata, typical of most Agrotidae forewings, have also disappeared in Agrotidae wainscot moths, but sometimes a white discal spot takes their place.

The wings are closed over the abdomen when the moth rests so that the wing-striations are roughly parallel with the ribbing or fluting of the narrow leaves or stems of the foodplant. As a rule, the adults of these

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(\*) *Calamia virens* L. has green forewings. This exceptional Wainscot moth inhabits a very mesophilous area of the world, so that its green colour is still cryptic. It is not found in Egypt.

Wainscot moths only fly at dusk and by night. The pattern is a day-time camouflage.

There are grass-feeders with this Wainscot pattern in most of the moth Families and Sub-Families, but the great majority of Palearctic Wainscots fall into two main groups of the Agrotidae; one group consists of external feeders on Gramineae, and these by reason of the adult's hairy eyes and distinctive male genitalia are grouped in the sub-family Hadeninae. The other group are internal-feeders or borers and by reason of the smooth eyes and different male genitalia are grouped in the Zenobiinae (= Caradrininae). These two Wainscot groups are very numerous in the Palearctic Zone and both occur in North America; the Hadenine Wainscots are also represented in the Tropics of both Hemispheres. No species is common (\*) to both hemispheres, except the migratory *unipuncta*, which is unknown in Egypt, a fact which is of significance in the history of the Temperate fauna, especially the Holarctic, but need not be further discussed here with reference to Egypt.

The Egyptian Hadenine Wainscots are : (101) *loreyi*, (102) *zeae*, and (103) *punctosa*; the Egyptian Zenobiine Wainscots are : (159) *cretica*, (160) *vuteria*, and (161) *typhae*. Outside these two main groups we find another Temperate species, (139) *albovenosa*, feeding on *Phragmites* (reed); its larva is an external feeder with conspicuous colouring and hairy tufts. It belongs to the Zenobiinae but quite without close affinity to the Zenobiine Wainscots mentioned above; indeed, it has sometimes (e.g. in Seitz) been separated into a third sub-family, the Acronyctinae. I have already referred to the reedswamp ecofauna to which it belongs in Part I (pp. 260-261); (161) *typhae* belongs to the same ecofauna, but has a different foodplant, usually separated (Typhaceae) from the Gramineae but sharing their visual character.

Except for *albovenosa*, all Lepidopterous larvae known to me feeding externally on Gramineae are smooth and procryptically coloured, with longitudinal stripes on a green, light brown, or straw-coloured ground; whereas the internal feeders as a whole, though also smooth, lack this type of larval marking; the pattern of the internal-feeders does not seem to have evolved with relation to visual effect, and agrees rather with the various coloration-types of plant-mining and wood-boring larvae of many insect families and orders.

Another single Egyptian Wainscot moth (168a) *albida* falls into a fourth Agrotid group, the Wainscots of the subfamily Melicleptriinae, and

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(\*) At one time (139) *albovenosa* was thought to be Holarctic but recent American taxonomists have separated specifically *A. henrici* Grote from the Old world species.

and possibly another (232) *straminea* into the Catocalinae; the latter is remarkable by being the only one of its close relatives with an approach to the Wainscot-pattern. The biology of these two is unknown but by analogy of pattern they should be grass-feeders. The Melicleptriinae Wainscots are Tropical-Sub-tropical, often Eremic; (232) *straminea* is Eremic in range.

Another single Egyptian Wainscot moth (337) *Phragmatoecia castaneae* falls into a very distant family, the Cossidae. It feeds on *Phragmites* internally and belongs to the reedswamp ecofauna, with *albovenosa*.

It will thus be seen that the Tropical and Eremic grass-feeders thrive better in Egypt than the Palearctic. Of the three Skippers, two are Tropical and the third, (54) *nostrodamus*, occurs South of the Tropic in certain parts of the Eremic Zone. The non-migrant Palearctic species, e.g. (1) *pisidice*, (103) *punctosa*, and (139) *albovenosa*, are local or scarce. (159) *cretica* belongs either to the Tropical or Eremic category, primarily.

One concludes therefore that although the Tropical grass-feeders have been recently decimated in most of Egypt by the desiccation of the last fifty thousand years, they survive in greater strength because they are ancient indigenous inhabitants of the land. So are the Eremic grass-feeders, but these have been less affected by the dessication.

#### (D) The *Tamarix*-feeders.

*Tamarix* is an Eremic genus of trees and shrubs ranging from South Europe, where one species is Mediterranean (but characteristic of sandy coasts), and North Africa to North-West India and Central Asia. They mostly inhabit oases. Their xerophytic structure, their taxonomic isolation in the botanical system, and their localisation in the arid parts of the Old World show that they have evolved in deserts and steppes from a very ancient period. Tamarisks occur everywhere in Egypt and have been much planted. Quite recently they are perhaps less frequently planted, owing to the vogue for exotics, like the Australian *Casuarina*, etc., which seem to foster no Lepidoptera, at all, in Egypt.

The Macro-Lepidoptera (to use a convenient but unscientific term) monophagous on *Tamarix* fall principally into two closely-related Agrotid-Quadrifid genera, *Clytie* and *Hypoglaucitis*, the larvae of which without exception are restricted to tamarisks. Egypt has, compared with other countries a high representation of these two genera. In the Geometridae, on the other hand, there are isolated species, occurring in genera of which the other species have different foodplants. With the exception of the Geometridae a history of continuous evolution in association with tamarisks of desert oases over a very long geological period can be postulated for these moths.

It must be mentioned that the *Clytie* and *Hypoglaucitis* are active fliers and though not migrants on the grand scale can fly some distance over unfavourable territory; when on board ship several miles out to sea south-west of Karachi I have seen *Clytie devia* Swinhoe enter the ship, this is usually a sign of migratory tendencies, but taken by itself is not a proof. The tendency will doubtless enable the species to cross barren expanses between isolated tamarisk-stands; but it should be remarked that the two tamarisk-feeding Geometridae, which do not exhibit the slightest roaming tendency, are in fact Pan-Eremic, i.e. even more widely distributed than the Saharan-Sindian (218) *Hypoglaucitis* which is itself more widely distributed than any of the *Clytie* species. As a matter of fact, proper migrants are, in desert lepidoptera, usually polyphagous on low plants and never monophagous on perennially-green vegetation like tamarisks. The migratory tendency is greatest in those whose foodplant dries up and disappears in the hot dry season.

It is rather difficult to explain why the weaker-fliers, (308) *ultimaria* and (310) *aestimaria*, which are the only tamarisk-feeders (as far as is known) in two not closely related large genera, should inhabit the whole desert zone from West to East, while the stronger-flying Agrotidae, belonging to smaller, closer-related and entirely-tamarisk-feeding genera, should not contain one species so widely distributed but on the whole be represented by one or more different species in different sectors of the zone. The fact suggests that speciation has taken place before the attachment to tamarisk in the former case (the Geometridae) and after it in the latter case (the Agrotidae), but why this should have happened and what is the historical significance is obscure. The wider distribution of the weaker-fliers would seem to suggest that perhaps involuntary transportation leads to a wider distribution than voluntary, or alternatively (as I prefer to think) that the speciation of the Agrotids is more recent.

The genera *Hypoglaucitis* and *Clytie* cannot unequivocally be called Tropical or Temperate. They are Eremic-Subtropical. Their remoter ancestry however would appear to be Tropical for the nearest related genera (much less close than they are to one another) seem to be Tropical African. The two Geometrid species, on the other hand, seem to be closer related to Temperate congeners.

One of the Egyptian *Clytie* species, (215) *illunaris*, is an almost Circum-Mediterranean littoral moth; it seems only to be unknown from the Asiatic Mediterranean coasts of that sea. In Egypt it is only known west of the Nile and it is presumably a recent immigrant from Cyrenaica and North West Africa. (217) *C. sancta*, on the other hand, is Western Eremic, ranging from Spain to Palestine and occurring in many Saharan localities; (216)



*haifae* is East Mediterranean and only known from Lower Egypt, Palestine and Syria; (218) *benenotata* is Saharan-Sindian. These last three and the two Pan-Eremic Geometrids occur indifferently on both sides of the Nile. These five are, in my view, ancient and indigenous inhabitants of Egypt; the only question is whether they were driven out during the Pleistocene Pluvial period. This turns on the availability of their foodplant. Only if rainfall was so heavy and well-distributed through the year as to give rise to equatorial forests or Temperate leaf-forests would tamarisks have had difficulty in surviving in Egypt, and I doubt whether this occurred during the Pleistocene Pluvial periods. In historical times tamarisks have been severely deforested; together with *Acacia* they doubtless, at the dawn of history, covered the floors of many desert valleys, particularly in Sinai, from which almost all traces of these trees have now vanished, the attendant monophagous insect-fauna suffering likewise.

#### (E) The *Acacia*-feeders.

*Acacia* is a numerous genus of Subtropical and Tropical trees and shrubs. It is richly represented in Tropical Africa, and also in Australia. Most are xerophilous; some acacias are myrmecophilous, that is, symbiotic with ants.

In Egypt only two species of this genus are widespread: *Acacia nilotica* ("sunt") (the subtropical race of *Acacia arabica*, common in the Sudan) is an oasis species, found in the Nile valley and Delta. *Acacia tortilis* is a desert species, dominant in the Wadi Edaib (or Aideb) near Gebel Elba and also found in desert depressions but becoming scarcer northwards. Several other species (e.g. *Acacia spirocarpa*) are found in the Gebel Elba region.

Acacias have a large monophagous and oligophagous lepidoptera-fauna, especially rich and numerous in Tropical Africa. Many are oligophagous, eating also other Mimosaceae or leguminous genera as alternatives. A few Egyptian *Acacia*-feeders are polyphagous (e.g. (182) *gayneri* and (261) *faustinata*), in which case they are not considered in this chapter; but most are monophagous. Though less well-known than temperate species, these lepidoptera seem to fall into groups of genera, or isolated genera, or groups inside genera, with the same monophagous diet, which can therefore be assumed to have been inherited from fairly remote ancestors. Such genera are (11) *Deudorix*, (21, 22) *Azanus*, (62) *Anadiasa*, and (214) *Scodionyx*; sub-generic groups exist in the genera (13) *Anthene*, (65) *Nadisa*, (220-221) *Cortyia*, and the following may be isolated species with this feeding habit: (183) *teihardi*, (311) *dentataria*, (321) *disputaria*, though subsequent biological studies will probably prove their close relatives to have the same mono-

phagous diet in most cases; more probably an isolated species is (244) *flavipalpata*. The *Acacia*-feeding *Lycaenids* are usually associated with ants.

Until the fauna of Tropical Africa is known in greater detail it would be rash to expatiate at length on the above groups, and doubtless one or two slight shifts may be necessary in my groupings above but there is already not the slightest doubt that the *Acacia*-feeders are shown both by their taxonomy and ecology to have a common origin with their foodplant, that is, they are the indigenous Tropical African xerophilous element in the Egyptian fauna and though doubtless commoner and more numerous in the Pluvial periods of the recent geological past, and probably remoter past too, they survive tenaciously in most places where their foodplant is left growing. Readers should refer to page 438 for the recent history of the Tropical trees in Egypt; one can safely attribute a similar history to the *Acacia*-feeding lepidoptera.

The world foodplant-group of *Acacia*-feeders is dry Paleo-Tropical in range, but Egyptian individual species seem to fall either into a Pan-African and Arabian or into a category less widespread in Africa, which one can call "Tropical Eremic"; the Egyptian *Acacia*-feeders in the first group, e.g. (13) *amarah*, range on dry ground across the Equator into South Africa, those in the second group, e.g. (214) *mysticus*, range from West to East over most or all of the Saharan-Sindian sector of the Eremic Zone; the second group penetrates sub-Tropical latitudes more often and more deeply than the first, though both are strongest on the Tropical fringe of the Zone, where summer rains occur. An example of this in Egypt is the remote and insufficiently-studied Gebel Elba district; on the other side of the Red Sea, the Tropical Hejaz and Asir mountains correspond; (244) *flavipalpata* is very common in those two Tropical Eremic *Acacia* parklands, but also penetrates to the Mediterranean coast on the Nile delta oasis, and spreads westward across the Sahara to the Atlantic.

Within the Eremic Zone the Egyptian *Acacia*-feeders show less endemism than the members of some other foodplant-groups. This is doubtless because they are on their own ground and have only comparatively recently begun to be isolated by disappearance of their foodplant. Very likely the disappearance is as much the result of cutting as of desiccation.

It is difficult to explain why the second group of these *Acacia*-feeders are not more widely distributed in Africa. Perhaps at a crucial period in the late Tertiary, the whole Continent was subject to Equatorial rains, so that the parklands and *Acacia* woods of the North were cut off from those of the South by an impassable belt of Tropical rain forest, and evolution in the North and South continued without any interchange of population

for a long period. Perhaps on the contrary the fauna of South Africa was separated from that of North Africa by an arid barrier, that is, a desert too dry even for the usual Tropical-Eremic species, or their ancestors, to cross.

That there has been an arid barrier between South and North African Tropical elements is certainly suggested also by the distribution of two Egyptian butterflies which are not *Acacia*-feeders but polyphagous on low plants, e.g. (30) *knysna* and (30a) *otis* (see Corbet 1948, fig. 7, for a map showing *knysna*'s distribution in Asia and Africa). The existence in Egypt of the Asiatic rather than the African subspecies of these two Tropical species is certainly remarkable and can best be explained by supposing that they advanced westward from Asia across Mesopotamia and Syria into the Mediterranean Basin during a Pluvial period when, nevertheless, Arabia, Southern Egypt and the Sahara were still arid. In the case of *knysna* the end of the Nile valley oasis at Aswan and the utter dryness of the North-Tropical desert prevented its *karsandra* subspecies from going further south than Aswan, or its African (*knysna*) subspecies from coming further northward, in this Sector of the Eremic Zone, than Jeddah, the approximate point where the influence of the present monsoon rains ceases; on the Atlantic coast however maritime humidity enabled *knysna* to circumvent the Sahara and so reach the Mediterranean from the extreme West, and the two subspecies met in Algeria. It is not certain whether one can postulate the same history for *otis*, which is so much more local in Egypt; its restriction to Siwa suggests a similar advance but at an earlier period; perhaps it was then killed off in intermediate localities (between Siwa and Tropical Asia) by the sea during the Mid-Pliocene subsidence. This hypothesis might also explain the absence between Siwa oasis and the Jordan valley of the Asiatic tree, *Populus euphratica*, though *otis* does not belong to the same geofauna; the tree is Eremic and not found in India on the tropical habitat of the butterfly.

The arid barrier, however, which intervenes between these two butterflies in Egypt and their African races cannot be the same as that postulated as once affecting the *Acacia*-feeders, for the same species of the latter occur at present in Arabia and Africa on the actual territory of both races, *knysna* and *karsandra*! The fact that it is only the two subspecies of *knysna* that are divided from one another by a present very arid belt whereas many distinct species of *Acacia*-feeding moth and butterfly are divided from relatives in Central or South Africa by no discernible present barrier at once suggests that the latter were separated at a much earlier period than *karsandra* and *knysna*. I would place *karsandra*'s advance to Aswan in the Recent Era, indeed in historical times, while the differentiation due to

physical isolation of the Tropical-Eremic *Acacia*-feeders from their Tropical African relatives (congeners) may be placed in the Tertiary. The Pan-African, or first group of *Acacia*-feeders, on the other hand, I consider to have achieved their full range somewhat more recently, in the Pliocene or the early Pleistocene. Since (13) *amarah* is also found in South-West Arabia, this and other Pan-Africans probably reached their full range just before the Indian Ocean broke through the Straits of Bab-el-Mandeb and flooded the Red Sea valley with salt water, thereby obliterating a biotope where, on the banks of fresh-water rivers and lakes the *Acacia*-feeders must have previously thrived.

#### The Principal Components : Conclusion

Thus while the *Acacia*-feeders have been taken to exemplify the Tropical element in the Egyptian fauna, the mention of two Lycaenids of different diet, and the previous mention among the grass-feeders of at least one Tropical species e.g. (53) *borbonica*, have shewn that the Tropical element as a whole is by no means homogeneous. The Tropical element contains different-foodplant-groups, and also species whose taxonomy shews different histories and origins.

The Tropical element of the Egyptian fauna, taken as a whole, is very numerous, and if all the species which are still doubtless to be discovered in the Gebel Elba district are included, will outnumber even the Eremic, the other numerous category in Egypt's Lepidoptera-fauna. Even excluding the species confined to the Gebel Elba district, the Tropical species are almost as numerous as the Eremic (including the Pan-Eremic) and exceed in numbers each of the Euroriental and Mediterranean categories in Egypt. Many of the Tropical species in Egypt are of course migrants and visit Southern Europe; they might equally be termed Sub-Tropical. On many types of ground in Egypt migrant Lepidoptera are the species most immediately in evidence. But when we recall furthermore that many of the Lepidoptera classed as Eremic cross the Tropic of Cancer and inhabit the desertic parts of the Tropical Zone, especially around the Red Sea, and have some claim therefore to be regarded as Tropical species, the importance of the Tropical element in Egypt becomes even more evident. I prefer however not to insist too often on these geographical category-names, for I have tried to shew that ecological categories are more natural and therefore more apt for historical reconstructions; besides, in the Eremic Zone, there seems to exist a characteristic Eremic fauna, peculiar to the Zone, but of dual origin, partly Tropical and partly Temperate. Such a state of affairs makes it difficult to apply terms (such as Tropical) exactly, in a study of the Egyptian fauna, of which the Eremic element is so important a component.



The above conclusions on the character of the Egyptian Lepidoptera-fauna will perhaps surprise those who previously based their ideas on it on Longstaff (1911) and Andres-Seitz (1923). The former stated : "The insect fauna of Egypt is essentially Palearctic in character; the great majority of its insects are also to be found in South Europe. As examples of Palearctic species extending through Egypt to the Sudan may be mentioned : *C. loreyi*, *E. spinifera*, *C. exigua*, *D. livornica*".

These four examples (Nos. 101, 79, 145, and 72 respectively in my list) are none of them purely Palearctic ! They cannot therefore be quoted to prove the Palearctic character of any country's fauna. Moreover, most of them, probably all, are migrants !

Andres-Seitz have somewhat similar views, thinking that 50 % of the Egyptian species are "European". This figure is however too high, even if we substitute "Mediterranean" or "Temperate" for "European", for it evidently includes Tropical migrants reaching Europe and also wrongly identified specimens. As a matter of fact none of the Egyptian lepidoptera is European in the strict zoogeographical sense. It is wrong to call "European" all species occurring in Europe, regardless of their range elsewhere : one might as well call these species "Egyptian" and then remark on the "Egyptian element" in the European fauna !

In reconstructing the probable history of the fauna I have so far hardly looked further back than the Pleistocene Period ; but, for the understanding of the fauna, it is this most recent history which is of supreme importance ; not only are the more remote periods of less significance for our present purpose, but any reconstructed history of the fauna during those remoter periods becomes more and more speculative. Only a few paragraphs, therefore, will be devoted to them.

From the geological record it would appear that during most of the Tertiary the fauna and flora of Egypt were of a Tropical rather than a Temperate kind ; but the question of the relative position of the Poles and the continents is still one on which qualified savants are not unanimous, despite the confidence in Wegener's and Koppen's charts shewn by Jeannel (1942). And this is only one of the uncertain bases on which a reconstruction of the remoter history would have to be built ; for instance, assumptions regarding a species' ecology are more open to question, the more remote the period.

There is however one family of moths which appears to confirm part of the Wegenerian (and Jeanellian) theory and it would perhaps be unjust not to discuss it briefly here. The family is the Megalopygidae and there are two Egyptian representatives (Nos. 255 and 256) polyphagous on low plants. In the Old World this family is represented by the single genus



*Somabrachys*; all the other genera are confined to the New World. The genus *Somabrachys* is peculiar to North (not Tropical) Africa; its members have not succeeded in invading Western Europe, as have most of the Atlanto-Mediterranean geo-fauna; and the extreme eastern limit of their range is the Mariout, in North-Western Egypt. If their presence in North Africa was short, in terms of geological history, one might easily explain this restriction by the fact that the females are apterous and by the ecological barriers of the Mediterranean Sea, Nile valley (see page 436 above), and Saharan desert; but the taxonomy of the moths, when considered with the geological data, suggests that they have been autochthonous residents of North Africa for the whole or at least most of the Tertiary, and if so, the above ecological barriers have not been constant throughout their stay there, and the reason why they did not, at favourable periods, extend their range further, is hard to guess. Perhaps for much of the Tertiary the genus was isolated on an Atlantic island, and only reached the African mainland late in that epoch. So much for the immediate (Tertiary) ancestors of the present species of the genus. As regards the remoter ancestry (? Secondary Epoch), the present location of all the other related genera points to a common origin in Brazil, or in a common Africano-Brazilian habitat. The thesis of Jeannel (after Wegener and Koppen), that the Africano-Brazilian stocks of the original "Inabresie" (Western Gondwanaland) were divided into two parts in the Cretaceous Age by the opening of the South Atlantic rift between Africa and South America, appears to explain the facts of the range of the genera of the family Megalopygidae. The generic differentiation of the family, must in that case, be mostly if not entirely Post-Cretaceous, and for some reason was greater in the New World, which we must consider the Family's real home. Perhaps the wingless state of the *Somabrachys* females prevented a comparable development in the Old World.

Since both Old and New Worlds have North-Tropical desert zones, the existence of a closely, related desert fauna in both would, if a fact, be relevant to the Wegenerian theory. As far as Lepidoptera and Flora are concerned, there is no really close relationship. Tamarisks are absent from the American deserts, and there is only one species of *Acacia*. There are, however, two desert *Prosopis* shrubs, very characteristic of the New World deserts. In the Old World, curiously, *Prosopis* is not characteristic so much of the western desert (nearest America) but of the more easterly, especially the Mesopotamian sector. It is rather rare and local in the Egyptian deserts. The other characteristic shrubs of the American deserts are quite without close relatives in the Old World deserts (e.g. *Yucca brevifolia*, *Chilopsis linearis*, *Larrea tridentata*, *Fouquieria splendens*, *Olneya tesota*, and the

many Cacti). Similarly in the Lepidoptera there are only a few genera and very few species common to both desert regions. We must however note the butterfly genus *Zegris* (absent from Egypt despite the existence in Western North-Africa of the Pan-Eremic species *Z. eupheme*), of which there is a representative species in Texas. We may also note the migrant hawkmoth (72) *lineata*, whose New World race is evidently now effectively isolated from the Old World race *livornica*, whatever may have been the case once. The genus *Timora* (168a) is also shared between the Old and New World Sub-Tropical and Tropical arid regions.

If, for the sake of argument, one accepts the hypothesis of Jeannel and Wegener, and seeks to relate it to the desert faunae of Lepidoptera in the Northern hemispheres of the New and Old Worlds, one is left with the impression that the Atlantic rift, which (according to them) separated North America from Africa and Europe in the early Tertiary, did not break into two parts an Eremic fauna common to both, but merely isolated in the New World one or two Eremic or xerophilous elements which had spread westwards well in advance of the Old World Eremic fauna, whose location then is doubtful; the great mass of the Old World Eremic fauna would not seem to have reached the Atlantic until later. The advance guard (e.g. the *Zegris* ancestor and perhaps the ancestor of *lineata*) thus moved in exactly the reverse direction to that taken by the genus *Somabrachys*, which appears to have originally been an American mesophilous Tropical genus rather than an Eremic; its continued absence from the arid hinterland of North Africa is probably a sign of this.

The common elements between the Old and New World lepidoptera of the Northern hemisphere might therefore be grouped into three :

(1) A mesophilous Tropical fauna. There are many common genera, widespread in the world, belonging here, but no species common to both Worlds except migrants. The Megalopygidae are common to both, but no genus of the family is common. This fauna has apparently therefore been separated by the Ocean since a very remote geological date.

(2) Eremic Tropical and Sub-Tropical Faunae. These faunae contain only a few genera (e.g. *Zegris*), common to both Worlds, and one or two common species, which however are migrants. Presumably these migrant species entered one or the other hemisphere later than *Zegris*, their migratory capacity enabling them to cross the Ocean barrier further north where it was perhaps narrower or to circumvent it overland further north; it is now too wide to permit effective exchange of populations of these migrant species. These faunae have therefore apparently been also separated since a remote geological date, perhaps less remote than (1).

(3) A Holarctic Temperate Fauna. This fauna contains many common genera, and some common non-migratory species; it is hardly represented in Egypt, except by the migratory members. It has obviously been united by land at a much more recent geological date than the two above.

This picture may be said generally to agree with the Wegenerian theory of an Atlantic rift beginning to separate the two hemispheres in the Tropics during the Cretaceous but not in the cool temperate latitudes until the Pliocene.

Enough has been said to indicate the faunistic links between the Western Hemisphere on the one hand, and the Old World Eremic Fauna in general and Egypt in particular, on the other. As regards Egypt, the links are rather remote, and it would therefore be wrong to discuss the Atlantic problem at greater length in this context.

Closer at hand and therefore of more significance to Egypt's fauna than the Atlantic is the Red Sea, which Wegenerians regard as an incipient rift between continental blocks. Its narrower dimensions make it a less decisive factor in zoogeography, but it undoubtedly presents problems on which the Egyptian fauna will shed valuable light. Unfortunately the Arabian fauna is less well-known, and there is still much to be done in North-East Africa; it would still be premature to assume that the species classed as Egyptian endemics, for instance, do not also inhabit Arabia. An analysis of the faunae of the Eastern and Western shores of the Red Sea must therefore be left till later. At present it appears that these two shores have a largely common fauna and an apparently smaller proportion of species peculiar to one side or the other.

## SUMMARY

Egypt is a low-lying Sub-Tropical desert, with higher or less desertic ground only at opposite corners, where conditions are rather more favourable to insect life; the Nile oasis traversing it from South to North provides a central narrow strip of ground also more favourable, but in a different way. Indigenous on this territory is a xerophilous Tropical and Sub-Tropical African fauna, and also an Eremic fauna. Neither fauna is homogeneous in origin or history, and, of the two, the Tropical is probably the more ancient. More recently arrived than either are the Temperate, mostly steppe, species; these have arrived mostly from the North-East in the last hundred thousand years, but also, to a lesser extent, from the North-West (Cyrenaica); among the latter are two Megalopygid species (an American family). The Nile valley has, in many cases, held apart the eastern and western

Temperate immigrants. The last Pluvial period occurred fifty thousand years ago. Since then desiccation has set in rapidly and very strongly; the present very dry climatic conditions have not varied significantly for twenty thousand years. Human interference however with the biotopes during the latter part of this period has further impoverished the fauna. Migratory species are consequently a disproportionately conspicuous element in the present fauna. The Tropical and Eremic categories predominate in this Fauna.

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**Explanation of Plate VIII**

Fig. 1 : *Eumichtis aurora aegyptiaca* Wilts., larva (slightly enlarged). — Fig. 2 : *Ophiura algira* (L.) (Linnaeus' type, in situ.). — Fig. 3 : *Celama mesoscia* Hamps. (= *Nola priesneri* Rebel 1948) (Rebel's type of the latter name), approximately  $\times 2$ . — Fig. 4 : *Sterrho microptera* Warr. and Rotsh., ♀ holo-type genitalia. — Figs. 5 and 6 : enlarged detail of Fig. 4. — Fig. 7 : *Sterrho granulosa* Warr. and Rotsh., ♀ holo-type genitalia. — Fig. 8 : enlarged detail of Fig. 7.

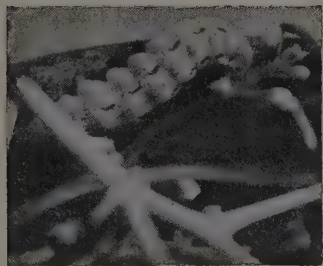
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*The Lepidoptera of the Kingdom of Egypt, II*

E. P. Wiltshire

Plate VII



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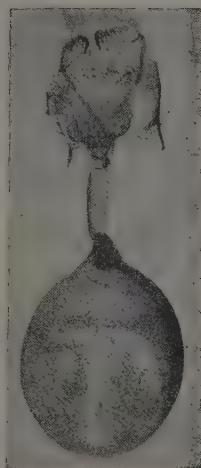
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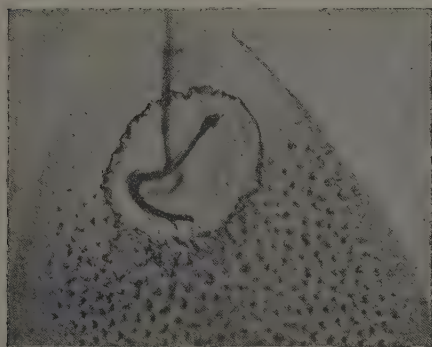
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**PLATE IX**

## Explanation of Plate IX

Fig. 1 : *Roeselia gallicola* spec. nov. (♂ type). — Fig. 2 : *Hemidromodes affinis* Roths. (♀). — Figs. 3 and 4 : *Hemidromodes affinis galala* subsp. nov. (types : 3 ♂; 4 ♀). — Figs. 5 and 6 : *Sternha hathor* spec. nov. (♀ ♀ types). — Figs. 7, 8 and 9 : *Brachyglossina williamsi* spec. nov. (types : 7 and 8, ♂♂; 9, ♀). — Figs. 10 and 11 : *Glossotrophia chalcographata sinaica* Rebel 1948 (10, ♂; 11, ♀). — Figs. 12 and 13 : *Glossotrophia alfieri* spec. nov. (♀ ♀ types : 12, gen. vern.; 13, gen. aest). — Fig. 14 : *Chloretrythra rubriplaga sinaica* subsp. nov. (♀ type). — Fig. 15 : *Traminda graciliata* Rebel 1948 (♀). — Fig. 16 : *Traminda rufistrigata* Hamps. (= *Cosymbia elbaensis* Rebel 1948) (♀). — Figs. 17 and 18 : *Gnophos subvariegatus claytoni* subsp. nov. (17, ♀; 18, ♂). — Figs. 19 and 20 : *Zamarada latilimbata* Rebel 1948 (♀ ♀). — Figs. 21 and 22 : *Scodionista amoritaria abdulhamidi* subsp. nov. (types ♀ ♀).

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*The Lepidoptera of the Kingdom of Egypt, II*

E. P. Wiltshire

Plate IX



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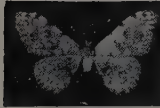
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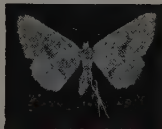
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BULLETIN  
DE LA  
SOCIÉTÉ FOUAD I<sup>er</sup> D'ENTOMOLOGIE

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العدد الثالث والثلاثون

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سابقاً :  
جمعية الحشرات المصرية (١٩٠٧ سنة ١٩٢١)  
والجمعية الملكية المصرية لعلم الحشرات (١٩٢٢ — ١٩٣٧)



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في ١٥ مايو سنة ١٩٢٣

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مطبعة بول بارييه

١٩٤٩







